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J. E. BROWNLEE, K.C., President.

R. C. BROWN, Managing Director.

Editors: P. M. ABEL and H. S. FRY.
Advertising Manager: K. D. EWART.Home Editor: AMY J. ROE.
Extension Director: G. B. WALLACE.

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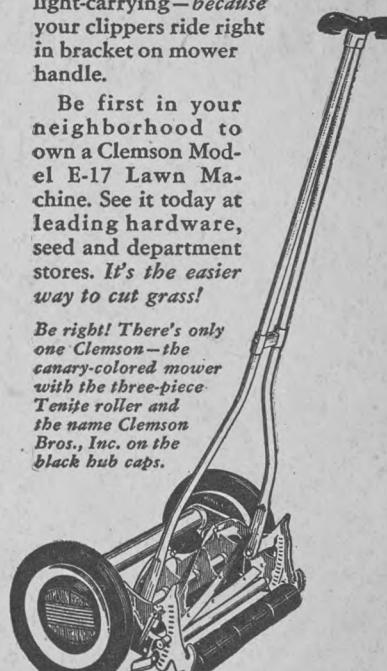
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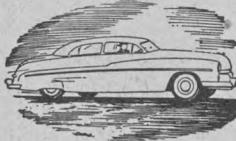


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All-New INTERIOR LUXURY

You really have to get inside this car to feel its bigness. The rear seat is a full five feet wide. The floor is much lower, so that even with the new low silhouette there is still ample headroom. One of the things that make this car feel more spacious is the almost unbroken sweep of safety glass from the large windshield to the expansive rear window, permitting a wide-open view in all directions. Interior is beautifully upholstered in your choice of three materials, which are richly set off with trim features. Arm rests, door hardware and floor coverings all combine to form harmonious interiors. The instrument panel is a good example of modern functional design—it has the instruments all grouped around the speedometer and directly in front of the driver.



Interior body lights go on when any door is opened. The car is ventilated with clean, fresh air supplied under slight pressure to prevent closed-car drowsiness and to de-fog windows. When a Mercury heater is installed, this new, built-in ventilation system provides fresh, warm air.



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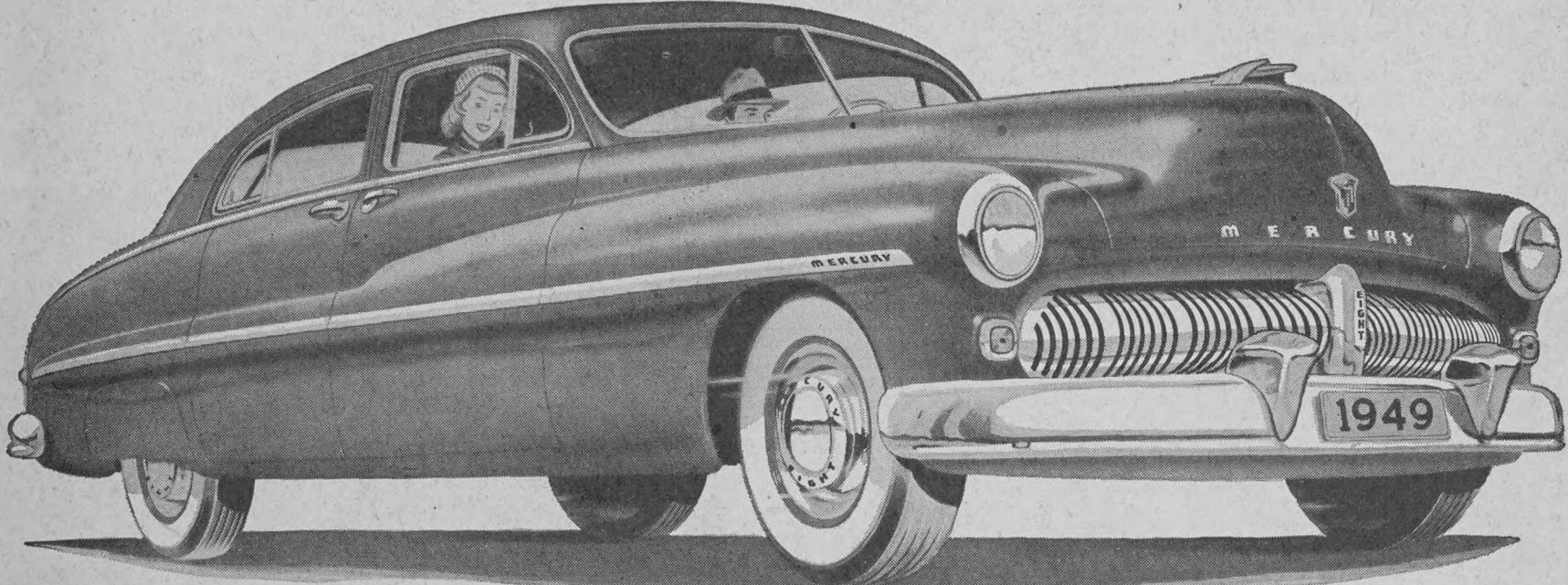
One of the most satisfying things about this all-new car is the "Lullaby Ride". This is the result of a lot of features being developed in a perfectly balanced relation to each other. The engine is well forward in the chassis. This in turn makes it possible to move the passengers into the "comfort zone" between the front and rear axles. Coil springs in the independent front wheel suspension and long, self-lubricating, longitudinal rear springs are controlled by sensitive, soft-acting, telescopic shock absorbers. The low centre of gravity and ride stabilizer take the body "lean" out of road curves. The whole car rides on the new, big, low-pressure tires. The new, more powerful engine is mounted at just three points, where it rests on big, soft cushions of resilient rubber.



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Under the Peace Tower

The Prime Minister maintains his reputation as a political strategist in his handling of the freight rates question.

By AUSTIN F. CROSS

HERE'S a well known Conservative who more than once has come home and announced that finally, at long last, they had Mackenzie King really backed into a corner. "This time," said the Tory, "he really can't get out." But of course, each time he did. At last, after a few years of this, the father came home to his boys and announced that King was through: "Boys, we've got him!" he announced triumphantly.

"Oh yeah?" jeered the four sons.

Of course King had no trouble slipping out of the political straight jacket the Conservatives thought they had sewed around him, and Houdini-like, he flung off his impeding gear and sidestepped another "crisis."

Well, the same thing has happened twice this session. The Progressive Conservatives, as well as the C.C.F. really thought they had hemmed King in this time, on prices. Here, they said, was really an election issue. But the Prime Minister promptly set up a price probe, and since then, the price enquiry has been a sort of boring busybody, snooping around and getting nowhere.

Then came the railway rates. This, said all parties, was really something. From this, insisted even the Liberals, there is no escape. Repeat — no escape. For the Liberals were among those howling loudest against the freight rate increase, and as I sat in the Press Gallery that first day when the House adjourned its regular business to discuss freight rates, I could not but notice that those talking most loudly against the 21 per cent freight rate increase were the Liberals. Gordon Isnor, staunch Liberal wheel horse from Halifax, and Thomas Reid, veteran M.P. from New Westminster, and living almost 4,000 miles apart, went after the government as bitterly as if they had been the opposition.

"This time we've got King," said some C.C.F.'ers.

"Here's our election issue," exulted the Conservatives.

But did they corner the Prime Minister? Not a bit of it. He did not even undertake to discuss the issue on its merits at all. He merely tossed this hot potato back into the perhaps reluctant hands of James Cross, chairman of the Board of Transport Commissioners. Now, for the next year, it is Jim Cross' own and exclusive hot potato.

THE Mahatma's argument is that this railway rate business is after all a matter for specialists, and not something to be argued out in parliamentary debate, where there is always more heat than light, more noise than action. The Prime Minister has said that this is a matter for specialists, and let the railway rate specialists settle it. Then he probably has whispered to the august commissioners:

"And for heaven's sake get rid of that mountain differential."

Let us look at this strategy from the political standpoint for the moment. First, when you give this railway rate

issue back to the Board of Transport Commissioners, you take it out of politics. If it had been left in the House, it would have split the Liberal party wide open. The only answer would have been an election. This election, vigorously fought by opposition groups, would have seen the long reign of the Liberals ended.

Meanwhile, King had plans. In fact, King always has plans. First, he had to pass the record of Walpole, who until April had been the prime minister in the Empire to have "ruled" the longest.

Mr. King passed Walpole's record in mid-April, an event widely chronicled in the press. Then, he had his own convention to think of, in August. Again, there was his Swan Song to sing when he got around to it. Finally there was the future of the Liberal party to consider. The Prime Minister wanted to leave his beloved Grits in such good shape that they would be able to win the next election, unless they fell apart through internal dissension.

Now then, none of these things could happen, if the railway rate issue stayed before parliament. So Mr. King passed the buck from parliament to the Board of Transport Commissioners.

He was then able to go into caucus and make a deal. Doubtless he spoke something like this:

"If you fight me on the railway rates, we'll all be back trying to get re-elected and most of you won't. But if we turn this thing over to the Board of Transport Commissioners, you can say you have washed your hands of it. The Commission will take a whole year, at least, to decide on a new rate structure. By that time you will be ready for an election anyway, if you have not already had one. By 1949, or maybe 1950, this won't matter."

Then up would get some aggressive Liberal, who would say: "Yes, but can you give us some hope that things will be improved?"

"I can," one can presume King saying. "You might tell your constituents that we are going to get rid of the mountain differential, and that we hope to have a brand new tariff which will be fair and just and equitable."

So on that pledge, the Liberals supported their leader. They will thus sail straight through this session, and on to the August convention.

There is no doubt that the Board of Transport Commissioners will write a new tariff. It is impertinence to tell the Board what ought to be in the new rate structure, and it is presumptuous to predict what the new Cross Tariff will be like. But still, there's no law against second guessing in Ottawa.

First of all, the mountain differential is sure to go.

It seems a fair guess too, that the railway companies in lining up new freight rates will have to take into account water borne competition. Those of you who have lived near a seaport know how very much cheaper water

(Turn to page 72)



Willard "SAFETY-FILL" BATTERIES

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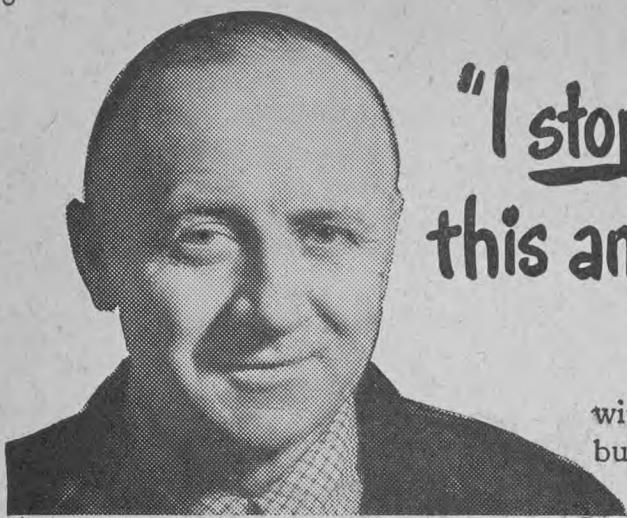
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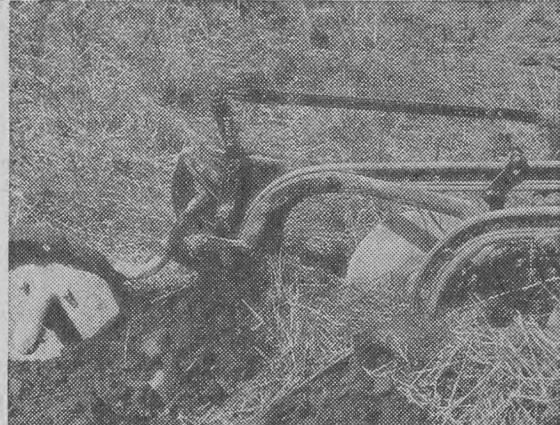
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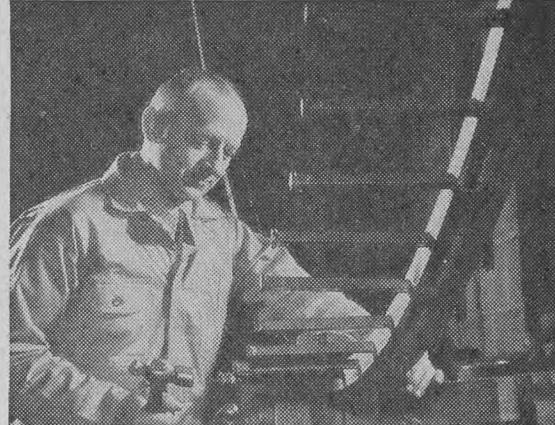
"I stopped soil erosion on my farm with this amazing Farmhand Prairie Mulcher!"



I WATCHED MY SOIL BLOW AWAY and wash away on my Upham, North Dakota farm... and like most prairie farmers west of the Mississippi I wished someone would invent a machine to stop erosion and bind the soil in place. Then I had an IDEA. Such a machine might solve these problems, too...



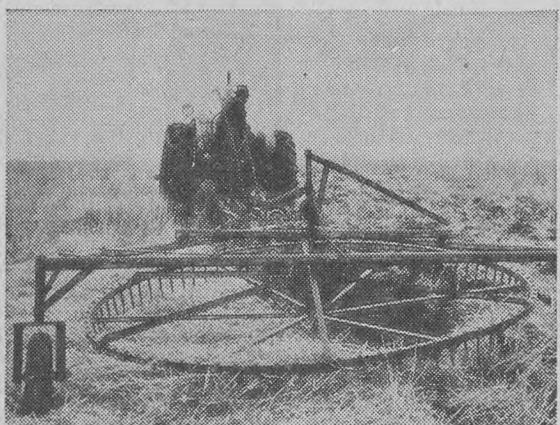
I WATCHED PLOWS PLUGGED TIGHT with straw and stubble as prairie farmers like me readied their fields for planting. And I watched farmers burn off that rich straw which might have helped save their soil. So I looked for a way to use that straw as a mulch to hold that valuable soil, nourish it and keep it from blowing.



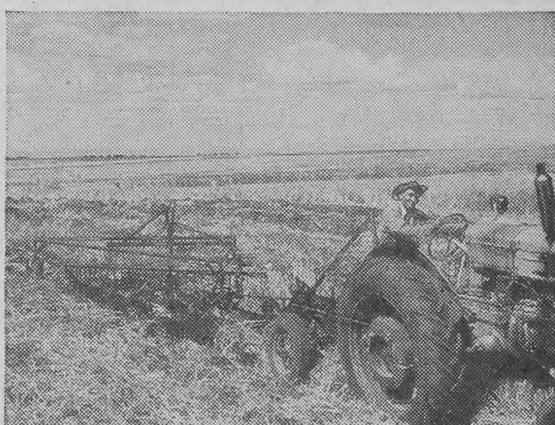
AND I INVENTED THIS MACHINE... a big, rotary rake that would follow a 2-3 or 4-5 bottom plow, or a one-way plow, and would spread straw and other vegetation evenly from the unplowed land over onto the freshly plowed soil to mulch and hold the soil in place. IT WORKED! I knew I really had something!



SO I TOOK MY INVENTION to the FARMHAND folks at the Superior Separator Co. in Hopkins, Minnesota... a well-known plant where farm machinery specialists work with farm inventors to perfect their machines and make them practical for mass production to help other farmers with similar problems.



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WATCH IT WORK! My FARMHAND PRAIRIE MULCHER helps you prepare a perfect seed bed with no air pockets... enables you to bury weed seed deeply. Use it any time... for fall plowing, spring plowing, summer fallowing. Many farmers report a 3 to 5 bushel gain per acre through use of the PRAIRIE MULCHER.

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GEOLOGISTS tell us of the presence of volcanoes in western Canada, over toward the coast. But they are extinct. We must seek elsewhere to learn of the presence of a continuing and very active volcano, which extends from the shores of the Pacific to the head of the Great Lakes. Its name is Freight Rates.

This particular volcano, at the present moment, is in eruption.

There have been outpourings of lava before, the last conspicuous occasion being a quarter of a century ago over a little matter of the Crowsnest Pass rates. The rates remained in effect, and the volcano subsided. Nevertheless, it has been muttering and rumbling ever since.

The present upheaval, of course, results from an order of the Board of Transport Commissioners, confirmed by the Dominion Government "without prejudice to any appeal," for a 21 per cent increase across Canada of freight rates. The fact that the order did not go so far as the applicant railway companies would have liked—they wanted a 30 per cent raise, not 21 per cent, and on somewhat more items than the Board has allowed—has done little to mollify and soothe.

Nor has the government's subsequent action in ordering an enquiry into the entire freight rates structure, while turning down the application of the four western provinces plus the maritimes—seven provinces in all—for a deferment of the increase until an appeal could be heard.

At this writing it appears highly improbable that the appeal will be granted. For the higher rates are now in effect, and few people are so optimistic as to believe that any government would undo an accomplished fact within a matter of a few weeks.

Any lingering doubts must have been dispelled by the speech in the House of Commons recently by Hon. Lionel Chevrier, Minister of Transport. Mr. Chevrier began by making courteous references to the seven premiers and their impending appeal, and an assurance that their representations would be most carefully considered. In fact, "if it is thought necessary to hear them, they will be heard."

THIS Minister then proceeded to make a speech which has been considerably admired in Ottawa as one of the best short statements of the railways' case. Western and maritime members of the House of Commons who heard him, however, were somewhat uneasy, because they had in mind the fact that the gifted advocate also happened to be a judge in the same cause.

The only considerations which kept Liberal members from the seven provinces in line were (a) that a fresh enquiry into the Canadian freight rates structure will be made at once with a view to removing discriminations as between one section of the country and another, and (b) that this investigation is to be completed within a year.

Meanwhile the 21 per cent increase must be paid for most freight items (and express).

The inequalities remain until the Board of Transport Commissioners finishes the new job assigned to it.

It is true that the straight percentage increase does not apply to grain and grain products moving from prairie points to Lakehead or Vancouver and Prince Rupert for export, nor to grain and grain products moving between points in western Canada for domestic consumption. These matters are covered by statutes, particularly the Crowsnest Pass Agreement, and were not contained in the railways' application.

It is also true that the Board scaled down the asked increases on such important commodities as coal and coke. Whereas the railways had applied for increases ranging from 20 to 40 cents a ton, the Board said they must be content with a flat 25 cents.

Nevertheless the fact remains that prairie farmers will pay appreciably more for many essential things entering into their costs of producing grain and other foods. They will do so because the Board of Transport Commissioners decided, after 150 days of actual sittings, that the railways simply must have more money. There could be no delay.

Mr. Chevrier pounced on this point of urgency. Withhold this present increase in freight rates, he said in effect, and the people of Canada will have to put up not \$15 million, but \$45 or \$50 million to meet the deficit of the Canadian National Railways. Not only that, that its great privately-owned competitor would incur a stiff deficit too and eventually be forced

MANNA FOR THE RAILWAYS

The federal government refuses to interfere with the decision of the Transportation Board and the 21 per cent increase goes into immediate effect

By RODERICK RYDER



MOTHER HUBBARD'S CUPBOARD

into liquidation. Which would mean amalgamation of the two railway systems under public ownership. The Minister was satisfied that no one in the House desired amalgamation. Whether that was so or not, no one took up his challenge. Even the C.C.F. evaded it, preferring instead to brush aside the question of amalgamation as not pertinent to the present set of facts.

What are these facts? Considering the millions of words that have been spoken on the subject, the task of sifting is difficult. To start with what is probably an over-simplification, the railways claim that without more revenue immediately from hauling freight they cannot provide efficient service, replace worn-out equipment, and meet demands by their employees for higher wages.

THIS seven western and maritime provinces (Ontario and Quebec maintained a dignified silence while the hearings before the Board were going on) contend that the Canadian Pacific Railway, which they prefer to take as a yardstick rather than the over-capitalized C.N.R., is not nearly so badly off as it makes out to be. If, however, a case should be made for letting the railways have additional revenue, then the burden should be spread more equally over the whole country.

This is a rough summary of the conflicting points of view before the Board of Transport Commissioners,

from the time the hearings opened at Ottawa on February 11, 1947, until the batteries of counsel had fired their final salvos at the same place on December 17.

Since the Board's order was made, and the government allowed it to stand, the critics have protested against what they deem to be unseemly haste. Surely the order could have been held in abeyance until the provinces' appeal was heard. More than that, were the railways in such desperate straits that they could not struggle along for another year while the equalization issue was being threshed out?

BUT from the other side have come hints that it may not be long before a further application is launched by the railways for a still further hike in the rates.

In an uncomfortably warm situation, the Board did its best to mollify both sides. As is usual in such cases, it seems to have failed to please either. At any rate, this paragraph occurs near the close of the 69-page essay which forms the judgment of Mr. J.

A. Cross, chief commissioner, and formerly attorney-general of Saskatchewan:

"Should the Board, at any time, be of the opinion that a greater amount of money is being paid to the railway companies than is actually necessary to enable them to maintain a reasonable degree of operating efficiency, the Board reserves the right, at any time, on notice, to readjust the rates to meet the conditions then existing. On the other hand, should the amount of evidence in rates authorized prove to be insufficient, the railways can always apply again."

The prairies (and British Columbia, and the Maritimes) are chiefly enraged because Mr. Cross and his colleagues ignored their pleas not to authorize a flat percentage increase. This hurts them more than the fact of a freight rates increase itself, however unpalatable that may be.

MOST westerners are fairly well acquainted with the nature of freight rates discrimination, even if they have none of the figures at their finger tips. They all know of those absurdities in the structure whereby it is possible to ship goods from Montreal to Honolulu, let us say, via Vancouver cheaper than to ship the same goods direct from Montreal to Regina or Edmonton.

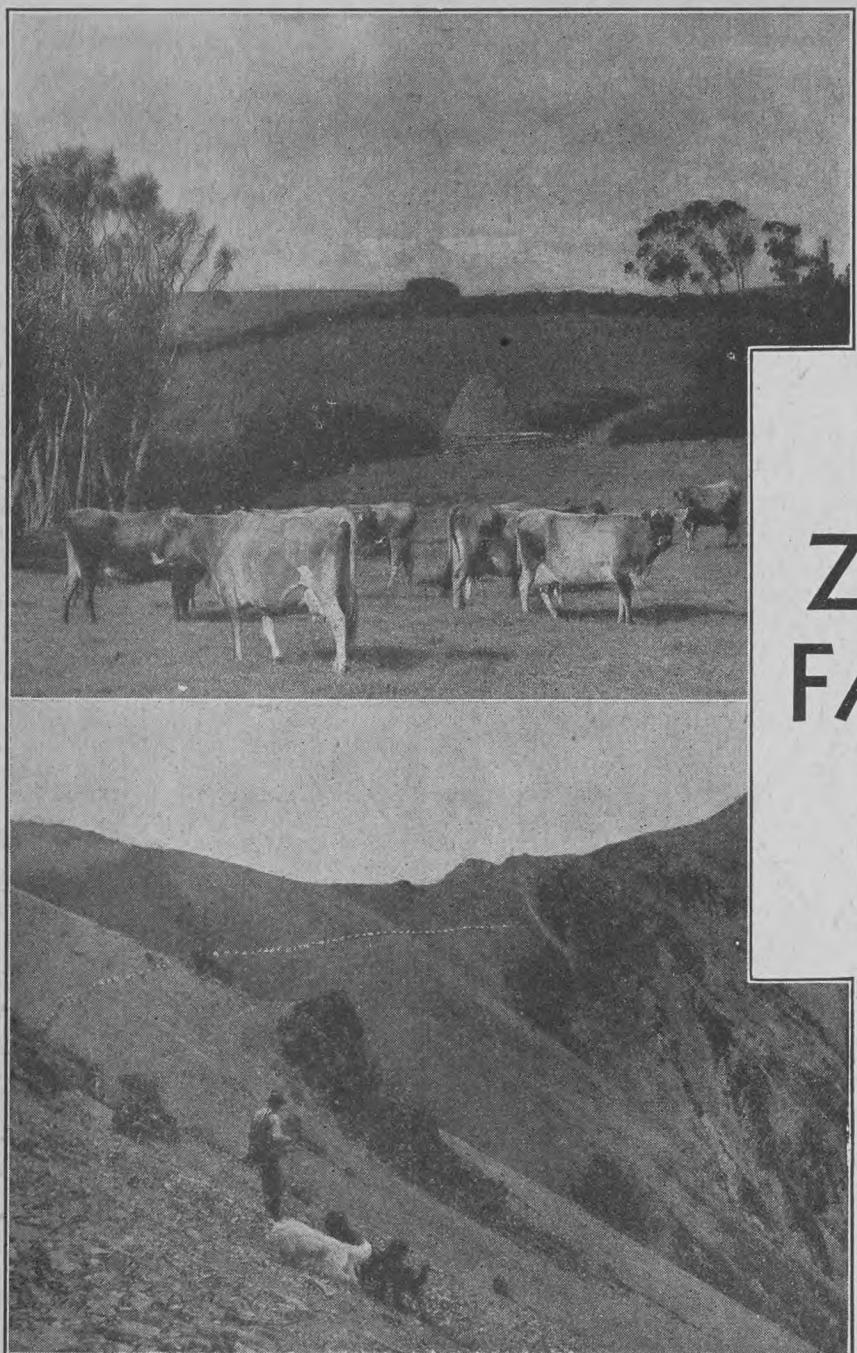
The following instances were placed on Hansard by A. L. Smith, member for Calgary West. The old rates per 100 pounds from Montreal to Vancouver for window glass were \$1.00, for paint and varnish \$1.25, for hardware and tools \$1.25, and for barbed wire 75 cents; while on all these commodities the Montreal-Calgary rate was the same, namely, \$1.98.

Westerners have also long been aware of other vexatious though perhaps less extreme anomalies. Above all, they know that for most commodities (there are exceptions) the rates are higher in the prairie provinces than in the central provinces of Ontario and Quebec, reaching their apex in Alberta.

The Pacific coast claims to suffer more from discrimination than any part of Canada. That is because of the so-called "mountain differential," whereby one mile in the mountain region is equal to one-and-a-quarter miles for rate fixing purposes. There is this to be said for the hard-pressed Board of Transport Commissioners in connection with the mountain differential. It once stood at two miles to one, and has been substantially reduced as a result of representations in the past. Speaking in the House of Commons recently, Mr. Chevrier expressed a hope—he could hardly be more specific—that when the Board had heard all the new evidence, it might see fit to wipe out the mountain differential altogether.

Whether this happens, and whether something is done to ease transcontinental rate problems, remains to be seen.

In the course of evidence to the Board by the province of Manitoba, it was submitted that western average freight rates are 14 per cent above eastern average rates. (Eastern means here, of course, the central provinces). Had the C.P.R.'s western traffic in 1946 moved at eastern rates, according to one Manitoba expert witness, it would have cost only \$101.5 million instead of the \$116.7 million which it did cost. By the same token, if eastern freight had moved during the same year at western rates, it would have cost \$124.7 million instead of \$110.3 million. These calculations took [Turn to page 92]



An adopted Canadian who has attained eminence in agriculture revisits the land of his nativity

NEW ZEALAND F FARMS ON GRASS

By L. B. THOMSON

Her rich soil and equable climate permit year-round grazing and a prosperous agriculture

Above: A Jersey herd near Morrinsville, Waikato.

Left: Mustering sheep in typical Merino country.

NEW ZEALAND is no exception to the fact that climate determines the type of agriculture in a country. During the past 100 years, a densely treed country of rivers and hills has been cleared by the pioneers to provide for the production of food products, which in the main is based on a grassland economy. Dairy products (chiefly butter), lamb, mutton and wool are the major products marketed from the farms, and constitute the main revenue in exports to Great Britain. The New Zealand farmer bases all his production on grass and forage crops, and no matter if specialized crops such as wheat, flax and peas are grown, grass is the basis of his thinking in all crop planning, in order to preserve the productivity of the soil.

Contrast this picture with the present grain economy of the Canadian prairies, where grass is maintained only on lands unsuitable for grain production. Fertility is not such a great problem as in New Zealand, but the supply and conservation of soil moisture determines the crop planning, and grass is seldom used in the grain rotation. Comparisons cannot be made between the two types of agriculture, but it is of special interest to learn the approach by New Zealand farmers to the best use of land.

The first impression one receives when approaching the North Island of New Zealand by air is of green hills and sheep. Interspersed are large blocks of pine forests to control erosion and supply the much-needed timber. Roads are built according to the contour of the country. Farm homes and buildings are all painted, mostly with red roofs. They are neat, well-planned homes and have the appearance of permanency suitable to the many operations of a well-planned farm economy. Not an economy that has just happened in a few years, but one that has stood the test of time and experience handed down from generation to generation.

THE South Island of New Zealand is divided into six provinces, and climate again determines the type of farm planning. In the northern part, in the provinces of Marlborough and Nelson, special crops such as peas, tobacco, fruit of all kinds, vegetable

seed crops of many kinds, and alfalfa and clovers are grown on the plains, but sheep are also grown to use the grass in the rotation and the waste products from the special crops. Sheep use the hilly country and graze out the year round without the need of herding as in western Canada. Canterbury is the wheat province of the Dominion where wheat is grown chiefly on the plains area reaching east from the Southern Alps.

Otago and Southland are the Southern Provinces and their land is highly productive. The rotation usually consists of meadow (clover and grass), grain crop, turnips or mangels, and then back to meadow with a nurse crop. Rotations of course vary, but amazing yields are obtained. Wheat yields average 60 bushels per acre, and a world record is claimed by one farmer, with a yield of 112 bushels per acre. Turnips yield up to 70 tons per acre. White clover and rye grass pastures, besides carrying four to seven sheep per acre for the best part of the season, will then harvest over 100 pounds of clean, clover seed per acre. These yields give some indication of the high productivity of the soil on the plains. The more hilly country is used for grazing sheep, where flocks vary in size from 2,000 to 10,000 head and, generally speaking, the lands will graze one sheep per acre. The Province of Westland, which is west of the Southern Alps, has a limited area of farm land. Mining of coal is the main industry in this province.

One does not expect to find any areas suffering from drought

in New Zealand. However, the central part of Otago and the southwestern part of Canterbury have only a rainfall around 14 inches per year, with a very high evaporation due to the strong northwest winds. Some irrigation has been developed for fruit growing, and for pastures and alfalfa production. Dry land farming is followed on the more level land, but the farmers are facing many unsolved problems of crop production. Likewise, the grazing lands have suffered greatly due to drought, rabbits and overgrazing. In the writer's judgment, this large area of low rainfall has not received the attention it deserves. Farmers are battling against the vagaries of climate and do not receive the same assistance through research and educational activities that farmers receive who live

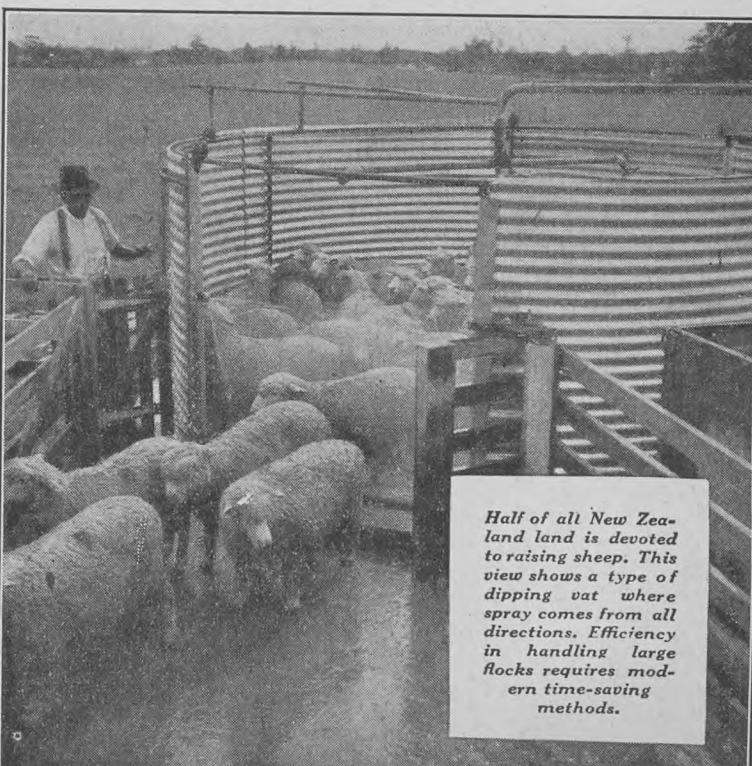
on the better lands. The largest irrigation project in New Zealand is located in South Canterbury. It is just beginning to function and will be some years before the irrigable land is used. It will be of interest to the irrigation farmer in Alberta that one farmer was using a stream of 10 second feet to irrigate his clover pasture.

THE North Island is rougher and more hilly in topography than the South Island. There are four provinces, Auckland, Wellington, Taranaki and Hawkes Bay. Dairy cattle and sheep use the land, and one seldom observes land being cultivated for crops. In favorable soil areas, fruit growing is a specialized industry and vegetable crops are important near the urban centres. The eastern part grows more beef cattle, the Aberdeen-Angus and Hereford predominating.

One cannot discuss the North Island with reference to Rotorua, thermal wonderland of the world. It is difficult to describe the geysers, hot springs, and boiling mud, that through thousands of years have created brilliantly-colored formations and oddities. It is hard to picture such conditions in the heart of a great agricultural country. The beauty of the North Island with its well-groomed farms, green hills with Jersey cattle and sheep, along with natural tree growth and native flowers, gives a picture of contentment. The people have been truly blessed with climate, no serious cold weather to contend with during the winter, and an equable rainfall throughout the year.

OF New Zealand's total land area of 66 million acres, approximately half is used for sheep farming. In the early years more attention was paid to the production of wool, and the Merino was the prominent breed. The past 40 years, however, has seen many changes, due to the introduction of refrigeration and the profitable fat lamb trade developed in Great Britain.

At present, the total sheep population is approximately 34 million head. The production of meat has assumed greater importance than wool, and a dual-purpose type of sheep has been developed. Over 10 million lambs are exported annually, the carcasses averaging from 35 to 45 pounds. [Turn to page 45]



Half of all New Zealand land is devoted to raising sheep. This view shows a type of dipping vat where spray comes from all directions. Efficiency in handling large flocks requires modern time-saving methods.

Fiddlers' Farewell

By MARK HAGER



I RECOLLECT the gloomy spells we used to have in our house when the cold, sleety rains would blow in from the east and keep us children penned up in the house for days at a time, and how tired of us Mother would get, and how she'd wish for the sun to come out again so we could get out of the house and Father could go back to the field.

And it always seemed like there wasn't a thing for us to do in the house, and we couldn't see people passing along the road to stop and talk, and nobody came, and we just got tired of one another there in the house.

I remember a bad spell one November that lasted nearly a week, and Mother would say, "It's the gloomiest weather and the gloomiest house I ever saw." The truth is you never take notice of how good the sunshine is till you missed it a while and lived in dreariness, which, I think, is why we were even glad one night, when the storm was bad and the splinters whined on the fences, to hear a violent coughing outside, and then a knock on the door.

I recollect how the children's eyes danced just to hear the sound of a human voice, even if it was a cough, and how quick and light Mother was when she tiptoed to the door and opened it, and there stood an old man, stooped with years and dripping wet, and his slouchy brown hat drooping over his ears. He had a red bandana handkerchief pinned around his neck, and he had on a little brown coat that was too short and drawed up in the rain, and he had it pinned with a safety pin at the collar; and his blue breeches seemed four inches too short, and he hugged something tight under his brown coat.

I CAN'T forget the proud little ring in Mother's voice when she said, "Come in!" She could always say that like she meant it, because she did.

And when he stepped inside in the light of the lamp, we could see what pleased Mother so. She was looking for a word or a sound of cheer in the week-long gloom that had shut us in. We could see the water dripping from the fiddle bow that was longer than the old man's coat.

He came in and looked in a circle around at us children. We had huddled around him, looking at him from head to foot, and when he looked down we could tell his eyes were friendly, and we liked him even before he ever spoke. It was so good to look into a stranger's eyes after looking at the gloomy knot-eyes in the dark pine ceiling for a week.

He didn't just come in and lay his fiddle down. Mother shoved up a chair in front of the fire, but he didn't sit down in it. He stood there on the hearth, and the water drained from his breeches and shoes and ran off and huddled itself in black puddles in the low places on the hearth, and he just kept hugging his fiddle under his arm.

Mother said, "Well, sir, you got the advantage of me; I don't believe I know you."

"You wouldn't," said the old man, and seemed like his eyes were saying how much we'd missed because we didn't.

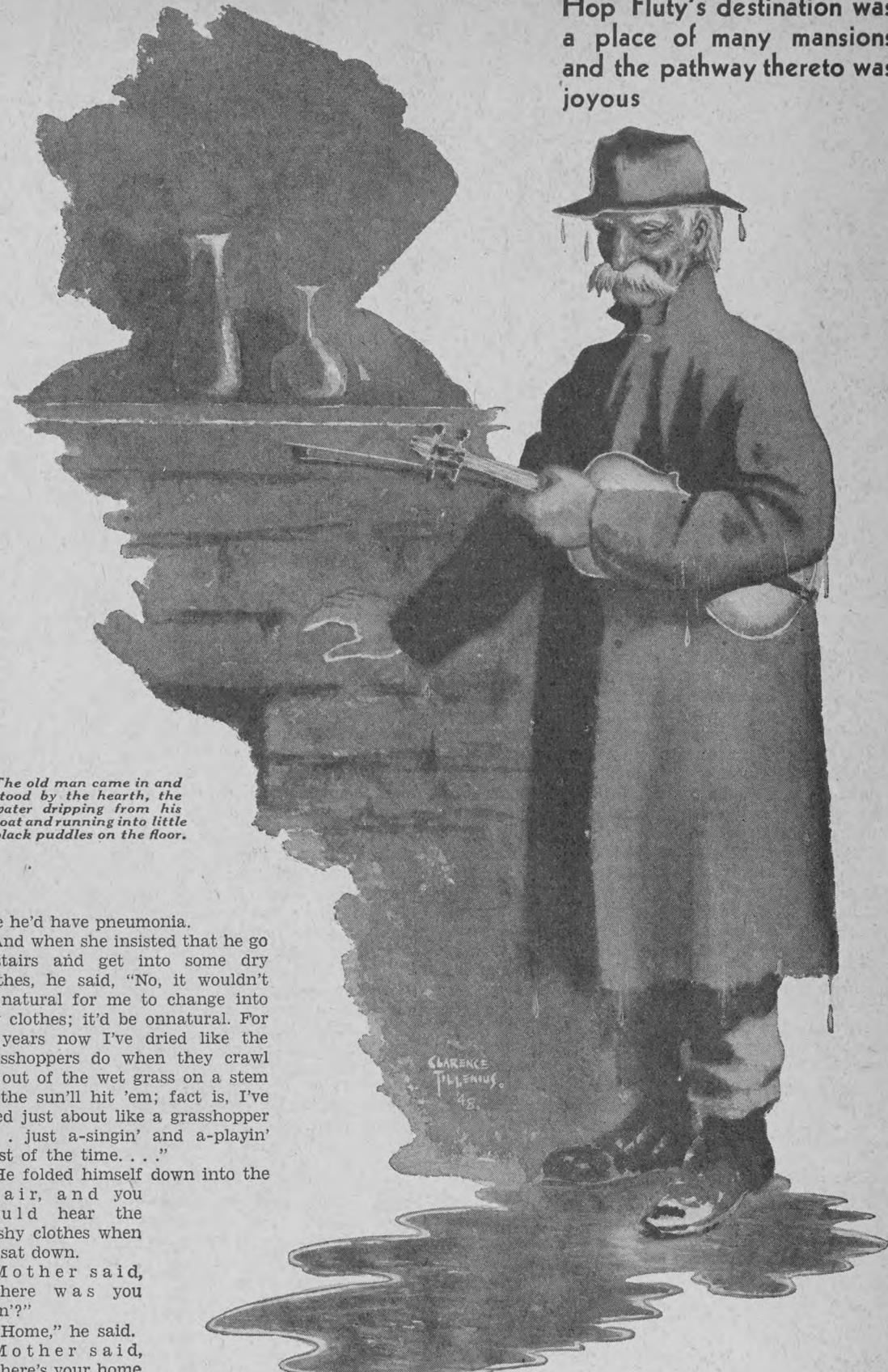
"Name's Fluty," he said, "Hop Fluty. Sort of known among fiddlers as Fiddlin' Fluty."

He coughed violently, and you could tell he was breathing hard, and all stopped up in his chest.

Mother said, "Have a chair, and let me dry your fiddle."

He looked down at the chair, and you could tell he dreaded to sit down in his wet clothes, and seemed like he was a little reluctant to even hand Mother the fiddle. He looked at her good, and then handed her the fiddle like it was something very precious and wasn't a thing to be knocked about or handed over to just any sort of person.

He watched Mother as she dried the fiddle and the bow with her apron, and didn't seem interested in her asking him about where he came from, and how he'd have to have some of Father's dry clothes or



The old man came in and stood by the hearth, the water dripping from his coat and running into little black puddles on the floor.

else he'd have pneumonia.

And when she insisted that he go upstairs and get into some dry clothes, he said, "No, it wouldn't be natural for me to change into dry clothes; it'd be unnatural. For 74 years now I've dried like the grasshoppers do when they crawl up out of the wet grass on a stem so the sun'll hit 'em; fact is, I've lived just about like a grasshopper . . . just a-singin' and a-playin' most of the time . . ."

He folded himself down into the chair, and you could hear the slushy clothes when he sat down.

Mother said,
"Where was you
goin'?"

"Home," he said.
Mother said,
"Where's your home
at?"

"In the hereafter," he said. "I ain't ever had any on earth . . . so it's a sort of eternal home . . . you might call it Fiddlers' Farewell . . ."

I DON'T know why, but the name of the place sounded good to me, even if it was in the hereafter, and I felt like I'd like to go where men go with friendly eyes like he had, and men that carried fiddles under their arms.

Mother said, "Where is Fiddlers' Farewell?"

"On top of Sourwood Mountain," he said, "in a graveyard there." His eyes danced like he was real proud of having a grave on top of Sourwood Mountain, and didn't seem to take it a bit serious that he was talking about the hereafter.

It sort of got mother. She was always so serious about things eternal and in the heavens.

She couldn't seem to think of anything to say, so she just plucked a string on the fiddle, and we thought it sounded real good, the sound Mother made on the fiddle, and so different from the dreary howl of the wind outside and the moaning in the trees.

But he didn't. He said, "You can't play, can you?"
"No," Mother said. "I only wish I could."

"I knew you couldn't," he said. "You didn't get any sound out of that fiddle string to speak of; it's got better sound in it than that."

Then he looked around the wall where people ought to have fiddles or banjos hanging, and he said, "Ain't you all got a thing in the house to play? It's a wonder you wouldn't all go crazy when you get rained in like this for a week at a time, and not a sign of a sound in the house—"

Seemed like he felt that what he was saying was real important. We didn't understand it yet, but tried to, because we liked him.

THEN he reached over with his long, lanky arm.

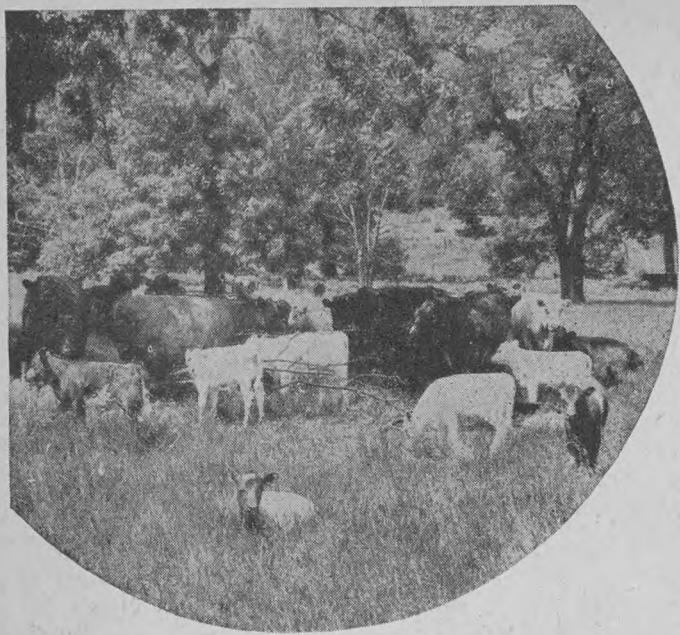
He never got up, but just stretched out his arm and got his thumb in shape to give the strings a rake where Mother held the fiddle by the neck. But he didn't give it a rake till he got the attention of every one of us. He just held his trembling thumb there, and said:

"Now all of you get right still and listen."

He said it like it was more important than anything either here or in the hereafter. We all huddled up around Mother and the fiddle, and he drew a long, hard, bony thumb across the four strings.

I can hear that sound yet. It was rich and pouring and hair-raising, and made your backbone tingle. Seemed like it soaked clear [Turn to page 58]

Illustrated by CLARENCE TILLENIUS



MEAT AND THE WORLD'S FOOD

ALL forms of life in the world are dependent on other forms of life. Fish live on forms of life found in the water, both plant and animal. Plants live to a very considerable extent on decaying plant life. Some forms of animal life live only on other animals and are called carnivorous. Others, such as the cow, sheep and horse live on various forms of plant life and are vegetarian. Some, like the pig, are omnivorous and will eat anything.

Man also, is omnivorous, but unlike the pig, he wants his food clean and as a rule is much more fussy in his tastes unless he belongs to some of the more primitive branches of the human family. He eats both meat and food from plants in many different forms, ranging from whale blubber to delicately flavored ice cream, among animal products, and from wheat to horse radish among plant products.

Probably because plant foods are obtained directly from the soil with a minimum of trouble and expense, these are the most widely consumed foods among all people in all countries. This is especially true of wheat and rice. Meat, however, plays an extremely important part in the world's diet, though even in highly civilized countries it is invariably something more of a luxury than bread. Since there are far more people living on very low incomes throughout the world than of those who do not need to worry about money, bread becomes the staple food for reasons of economy. One acre sown to wheat will keep as many people alive in times of famine or food shortage as seven acres devoted to the production of beef.

Nevertheless, in the temperate and colder climates of the world, meat has been an important part of the diet of the people for many centuries, particularly the meat from cattle, hogs and sheep. With these forms of livestock, many of the agricultural resources in the form of pasture, fodder, other forages and surplus grains can be turned to good pur-

BACK PAY FOR WHEAT PRODUCERS

Busy days in the Wheat Board office. How 900,000 cheques totalling about \$156 million for 300,000 individuals, are sent out

By H. S. FRY

HOW would you go about sending out about \$150 million worth of cheques? That's what the payment department of the Canadian Wheat Board is now engaged in doing. They have been at it since March 25 and before, though no cheques could actually be mailed until April 1, when the authorization by Parliament for an additional 20 cents per bushel on wheat delivered to the Board for the crop years 1945-1946, 1946-1947, and up to March, 31 for the crop year 1947-1948, was made effective.

It is impossible, for various reasons, to state precisely the amount that will be distributed as a result of the recent authorization. One of the reasons is that until the Wheat Board is supplied by all elevator companies and grain handling concerns with complete records of all grain delivered to them prior to April 1, it is impossible to determine the exact bushelage on which the payment is to be made. Another important reason is that until producers themselves have forwarded the necessary requisition forms, with duplicate grain tickets, payment must be held back. As nearly as can be estimated, however, the 20-cent payment on wheat will mean approximately \$156 million, covering 235.4 million bushels delivered on the 1945 crop, 335.2 million bushels from the 1946 crop and approximately 208 million bushels delivered to March 31 from the 1947 crop, making a total of 779 million bushels.

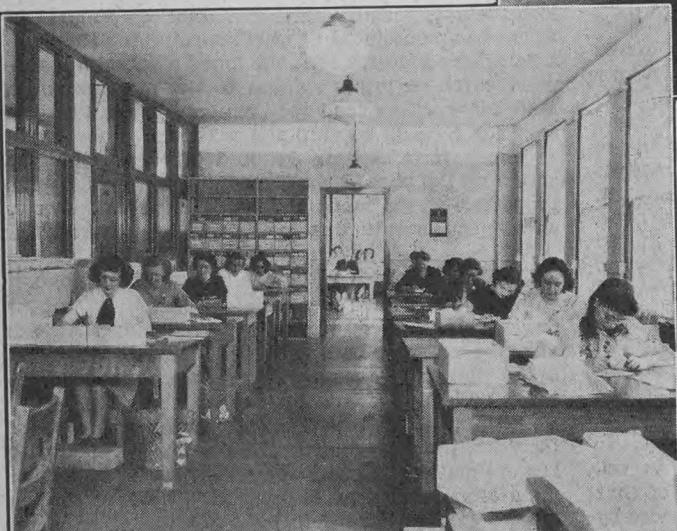
In addition, an equalization payment on oats of 3.62 cents per bushel has been authorized as from August 1, 1946, to July 31, 1947. This will amount to a further \$3,752,000 on 103,837,000 bushels of oats.

A further amount of nearly \$6 million has likewise been authorized for the 1947 flax crop at the rate of 50 cents per delivered bushel. These additional amounts on oats and flax amounting to between \$9 and \$10 million will therefore bring the total to be distributed for all grain up to March 31, to approximately \$165 million.

THIS article, however, is more particularly concerned with the methods which the Wheat Board has found it necessary to adopt for the distribution of such a large sum of money to a very large number of people. The number of permit holders varies somewhat from year to year, but for

These girls are sorting by elevator points, unopened envelopes of duplicate grain tickets as received at the Wheat Board office, 423 Main St., Winnipeg.

This is one of seven checking sections, where the growers' tickets are checked with the duplicates from the elevator company handling the grain.



1947 numbered approximately 238,000. Each of these permit holders presumably will receive some payment. In addition, there are perhaps 50,000 other "legal" persons who are entitled to a share of the money by reason of a landlord, mortgagee or vendor interest in the crop. This gives us a round figure of perhaps 300,000 cheques to be issued to that many different persons.

THIS number, however, must be multiplied by three, because it is not practicable to issue one cheque covering the three crop years to each individual. A public agency such as the Wheat Board must keep extremely accurate accounting



In this machine room, a variety of complicated machines, punchers, collators, tabulators and cheque writers produce the completed cheque.

Even with the help of many machines, the wheat payments department of the Wheat Board keeps 260 employees busy enough to require overtime.

records, and everyone will understand also that it is important to keep the records for each crop separate from any other crop. Consequently, every person who has delivered wheat to the Board in each of the three crop years concerned will receive three cheques, with a total issue of close to 900,000 cheques for the wheat payment alone.

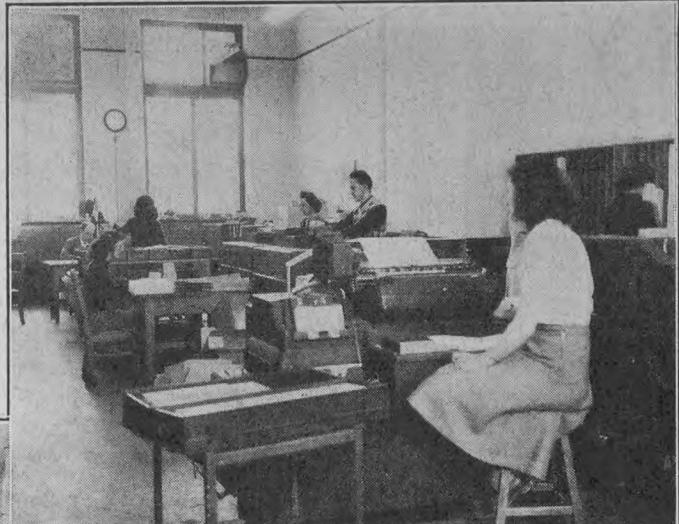
If writing out the cheques were the only thing involved in making this very sizable payment, it would be a relatively simple operation, limited only by the capacity of the cheque-writing and cheque-signing machines. Interesting and rapid as these operations are, they are almost the last of a long series of much more laborious operations which must be done before accuracy can be guaranteed. In fact, there are relatively few people employed in the machine room (see illustration), while in the payment department as a whole, about 260 are employed. In order, therefore, that readers of *The Country Guide* might get some sort of picture of what is involved in making a large payment of this kind, we made arrangements to have the process explained thoroughly to us.

WHEN the Wheat Board makes a payment, it first must arrange for a very large amount of stationery, including requisition forms, envelopes and printed instructions to producers and elevator companies. For each crop, producers will hold varying numbers of certificates, which they must forward to the Board before payment can be made. Each certificate must be listed on a requisition form and then sent in to the Board in the special envelope provided for the purpose. As many as three million certificates may be received in the wheat payment department for each crop year involved in a payment. Thus the 900,000 cheques already referred to may involve handling, sorting and checking eight or nine million producer's certificates.

In the case of the 1945 crop, one adjustment payment of 10 cents per bushel has already been made, so that producers who have already surrendered their certificates for this payment, have no more to send in. They have only a yellow copy of the requisition form to serve as a receipt, and they should keep it. The Wheat Board already has the original requisition forms and certificates and will use these to make the second adjustment payment of 20 cents per bushel.

Farmers are still holding, however, certificates covering nearly 16 million bushels of 1945 wheat, on which they can now collect 30 cents per bushel if they will send them in to the Board, properly listed on a requisition form. As of March 25, the certificates outstanding on the 1945 crop represented about seven per cent of the total number of certificates involved.

Before March 25, the 1946 crop certificates had been called in, but not more than [Turn to page 33A]



The Revolt of Mother

BY MARY E. WILKINS

FATHER!

"What is it?"
"What are them men diggin' over in the field for?"

There was a sudden dropping and enlarging of the lower part of the old man's face, as if some heavy weight had settled therein; he shut his mouth tight, and went on harnessing the great bay mare. He hustled the collar on to her neck with a jerk.

"Father!"

The old man slapped the saddle on the mare's back. "Look here, Father, I want to know what them men are diggin' over in the field for, an' I'm goin' to know."

"I wish you'd go into the house, Mother, an' tend to your own affairs," the old man said then. He ran his words together, and his speech was almost as inarticulate as a growl.

But the woman understood; it was her most native tongue. "I ain't goin' into the house till you tell me what them men are doin' over there in the field," said she.

Then she stood waiting. She was a small woman, short and straight-waisted like a child in her brown cotton gown. Her forehead was mild and benevolent between the smooth curves of grey hair; there were meek downward lines about her nose and mouth; but her eyes, fixed upon the old man, looked as if the meekness had been the result of her own will, never of the will of another.

They were in the barn, standing before the wide-open doors. The spring air, full of the smell of growing grass and unseen blossoms, came in their faces. The deep yard in front was littered with farm wagons and piles of wood; on the edges, close to the fence and the house, the grass was a vivid green, and there were some dandelions.

THE old man glanced doggedly at his wife as he tightened the last buckles on the harness. She looked as immovable to him as one of the rocks in his pasture land, bound to the earth with generations of blackberry vines. He slapped the reins over the horse, and started forth from the barn.

"Father!" said she.

The old man pulled up. "What is it?"

"I want to know what them men are diggin' over there in that field for."

"They're diggin' a cellar, I s'pose, if you've got to know."

"A cellar for what?"

"A barn."

"A barn? You ain't goin' to build a barn over there where we was goin' to have a house, Father?"

The old man said not another word. He hurried the horse into the farm wagon and clattered out of the yard, jouncing sturdily on his seat as a boy.

The woman stood a moment looking after him, then she went out of the barn across a corner of the yard to the house. The house, standing at right angles with the great barn and a long reach of sheds and outbuildings, was infinitesimal compared with them. It was scarcely as commodious for people as the little boxes under the barn eaves were for doves.

A pretty girl's face, pink and delicate as a flower, was looking out of one of the house windows. She was watching three men who were digging over in the field which bounded the yard near the road line. She turned quietly when the woman entered.

"What are they diggin' for, Mother?" said she. "Did he tell you?"

"They're diggin' for—a cellar for a new barn."

"Oh, Mother, he ain't going to build another barn?"

"That's what he says."

A boy stood before the kitchen glass combing his hair. He combed slowly and painstakingly, arranging his brown hair in a smooth hillock over his forehead. He did

not seem to pay any attention to the conversation.

"Sammy, did you know Father was going to build a new barn?" asked the girl.

The boy combed assiduously.

"Sammy!"

He turned, and showed a face like his father's under his smooth crest of hair. "Yes, I s'pose I did," he said, reluctantly.

"How long have you known it?" asked his Mother.

"Bout three months, I guess."

"Why didn't you tell of it?"

"Didn't think 'twould do no good."

"I don't see what Father wants another barn for," said the girl, in her sweet, slow voice. She turned again to the window and stared out at the digging men in the field. Her tender, sweet face was full of a gentle distress. Her forehead was as bald and innocent as a baby's, with the light hair strained from it in a row of curl papers. She was quite large, but her soft curves did not look as if they covered muscles.

Her mother looked sternly at the boy. "Is he goin' to buy more cows?" said she.

The boy did not reply; he was tying his shoes.

"Sammy, I want you to tell me if he's goin' to buy more cows."

"I s'pose he is."

"How many?"

"Four, I guess."

His mother said nothing more. She went into the pantry, and there was a clatter of dishes. The boy got his cap from a nail behind the door, took an old arithmetic from the shelf and started for school. He was lightly built, but clumsy. He went out of the yard with a curious spring in his hips that made his loose, home-made jacket tilt up in the rear.

The girl went to the sink and began to wash the dishes that were piled up there. Her mother came promptly out of the pantry and shoved her aside. "You wipe 'em," said she. "I'll wash. There's a good many this mornin'."

THE mother plunged her hands vigorously into the water, the girl wiped the plates slowly and dreamily. "Mother," said she, "don't you think it's too bad Father's going to build that new barn, much as we need a decent house to live in?"

"I wish you'd go into the house, Mother, an' tend to your own affairs," the old man said.

Her mother scrubbed a dish fiercely. "You ain't found out yet, we're women-folks, Nanny Penn," said she. "You ain't seen enough of men-folks yet to. One of these days you'll find it out, and then you'll know that we know only what menfolks think we do, so far as any use of it goes, an' how we'd ought to reckon menfolks in with Providence, an' not complain of what they do any more than we do of the weather."

"I don't care; I don't believe George is anything like that, anyhow," said Nanny. Her delicate face flushed pink; her lips pouted softly, as if she were going to cry.

"You wait an' see. I guess George Eastman ain't no better than other men. You hadn't ought to judge Father, though. He can't help it, 'cause he don't look at things jest the way we do. An' we've been pretty comfortable here, after all. The roof don't leak—ain't never but once—that's one thing. Father's kept it shingled right up."

"I do wish we had a parlor."

"I guess it won't hurt George Eastman any to come to see you in a nice clean kitchen. I guess a good many girls don't have as good a place as this. Nobody's ever heard me complain."

"I ain't complained either, Mother."

"Well, I don't think you'd better, a good father an' a good home as you've got. S'pose your father made you go out an' work for your livin'? Lots of girls have to that ain't no better able to than you be."

SARAH PENN washed the frying pan with a conclusive air. She scrubbed the outside of it as faithfully as the inside. She was a masterly keeper of her box of a house. Her one living room never seemed to have in it any of the dust which the friction of life with inanimate matter produces. She swept, and there seemed to be no dirt to go before the broom; she cleaned, and one could see no difference. She was like an artist so perfect that he has apparently no art. Today she got out a mixing bowl and a board, and rolled some pies, and there was no more flour upon her than upon her daughter who was doing finer work. Nanny was to be married in the fall, and she was sewing on some white cambric and embroidery. She sewed industriously while her mother cooked; her soft, milk-white hands and wrists showed whiter than her delicate work.

"We must have the stove moved out in the shed before long," said Mrs. Penn. "Talk about not havin' things, it's been a real blessin' to be able to put a stove up in that shed in hot [Turn to page 86]



THE day is always two or three hours shorter under a heavy growth of pine trees. The morning light needs time to soak down through the branches, as it were; and in the evening the night seems to rise up out of the ground.

So it seemed to young Alec Gary as he rode his mustang up the mountainside toward the clearing. It was already twilight in those woods. But there was still a dull, rosy golden light in the air when he came out into the open.

Before him he saw the big she-wolf. At his coming she had slunk to the other end of her chain and cowered against the ground, her bright eyes flashing from side to side as she vainly searched for some means of escape.

On the far side of the clearing there was a straight face of rock some 25 or 30 feet high. He had not been able to see it from across the valley, no doubt because of the way the shadows from the trees fell across the polished face of it. Off to the side, half lost among the trees, he could see the shadowy forms of the leashed dogs. But more interesting than anything else, to the eye of Alec Gary, was the slender figure of Joe Thurston standing facing him with a loaded rifle.

"Hello, Thurston," he said. "You don't have to shoot. I'm a friend."

He laughed a little, as he said this.

"You're a friend, are you?" said Thurston. "And what makes you think that I expect to see any enemies around here?"

"The point is that I *don't* think it," answered Alec Gary. "But you seem to be ready for anything."

"That's a good way to seem," answered Thurston.

HIS thin lips kept twisting a little, and his eyes were always focusing and narrowing as though he were picking out the part of Gary's body into which he intended to put a slug of lead.

He added: "What brought you up here, and who are you?"

"Alec Gary. I'm up here with a friend of mine."

"Alec Gary? I don't remember that name. Ever see me before?"

"Yes. I remember you, all right. But I'm not important enough to be looked at twice."

This modest remark brought no smile from Thurston.

Silvertip's Chase

By MAX BRAND

SERIAL—PART IV

"It's a funny time to be breaking in on a camp, seems to me," he said. "If you've got a friend with you, where is he?"

"Back yonder," said Gary, with a very general wave of his hand.

"Back where?"

"Over yonder."

"Who is he?" asked Thurston. "Don't beat around the bush like this. Who is he?"

"A fellow you may have heard of. His name is Jim Silver."

The effect was instant. Thurston dropped the butt of his rifle to the ground and nodded.

"Jim Silver's with you, eh?" he said. "And doing what? Hunting Frosty?"

"How do you guess that?"

"Silver can't do anything that people won't talk about," said Thurston. "Every time he lifts his hand, the shadow falls across the sky." He chuckled, amused by his own conceit.

"Get off your horse and sit down," said Thurston finally.

Gary accepted the invitation.

"There's nothing cooked yet," said Thurston. "Can't offer you anything."

"That's all right. Other fellows out hunting grub?"

"What other fellows?" snapped Thurston.

"Why," said Gary, "you couldn't be up here handling and feeding a mob of dogs like this all by yourself."

But he was disturbed by the sudden way in which Thurston had snapped the words at him.

"I can handle those dogs and more," was all that Thurston replied.

"That's Frosty's mate, isn't she?" asked Gary.

"What makes you think so?"

"Why else would you have her on a chain?"

"Because she's the finest she-wolf that I've ever seen. Some of the museums are always looking for outstanding specimens like her. They get plenty of fine dog-wolf pelts for stuffing, but mighty few females that are not runts."

Gary merely smiled.

"You don't believe me, eh?" asked Thurston, frowning.

"Sure, that's all right," answered Gary. "I believe anything that you want to tell me."

"Thanks," said Thurston coldly.

He kept on eyeing Gary as though with a profound distrust.

"All right," said Gary. "You don't have to open up and talk. We're both after the same scalp, and I suppose you'll get it—now that you have this museum hide staked out. Do you always do that, Thurston?"

"Do I always do what?"

"Stake out your big wolves and cool 'em off with a little walking on a chain before you take their hides?"

Joe Thurston snapped suddenly: "You're too curious."

"Sorry," said Alec Gary slowly.

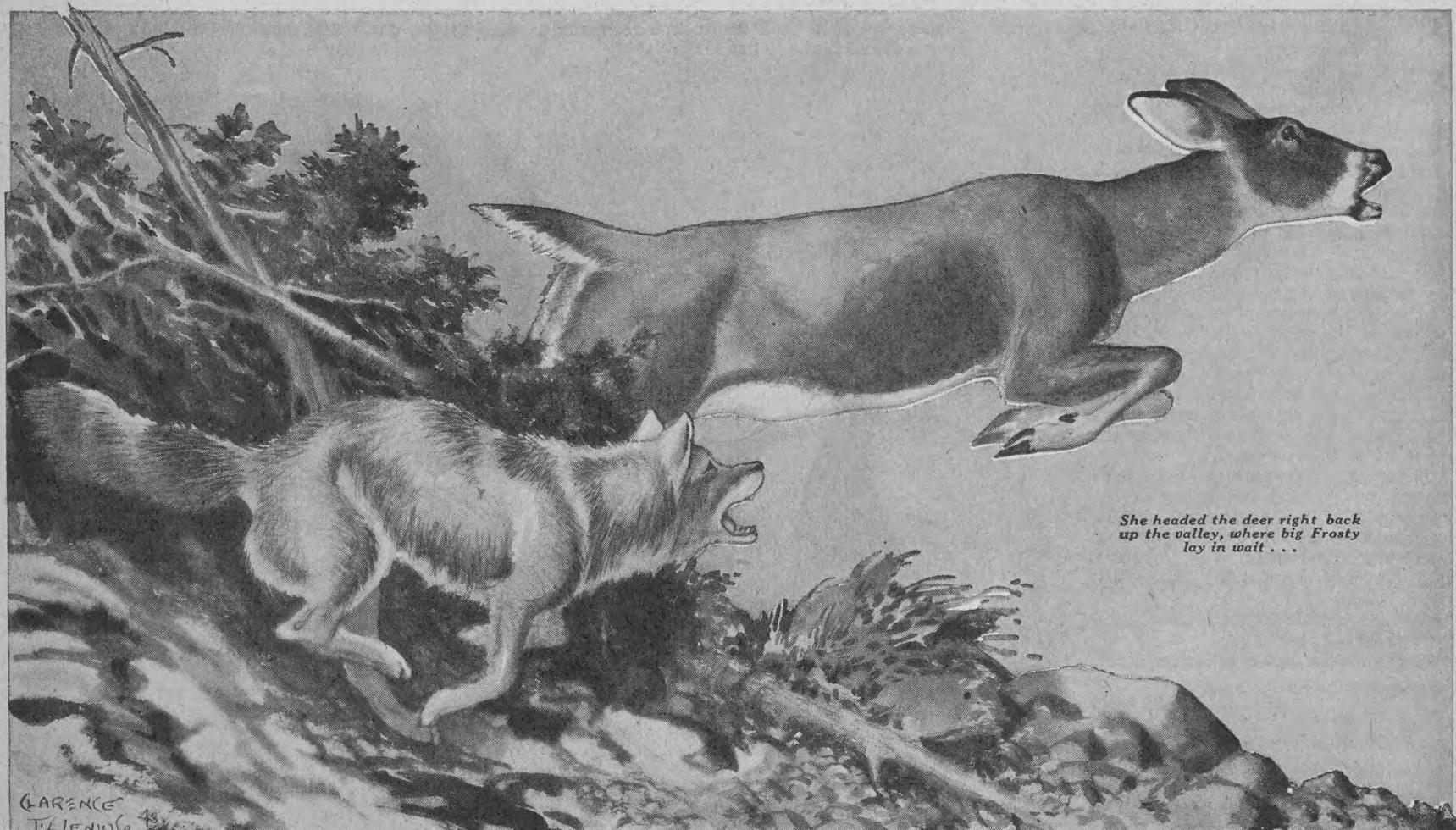
Thurston turned suddenly on his heel and walked off through the trees.

HE simply tossed over his shoulder the words: "He's Jim Silver's hunting partner, and Silver is somewhere around here."

Whom was he addressing? Alec Gary glanced over his shoulder and saw two big men stepping out from behind the pine trees. One was heavily, strongly made about the shoulders and narrow through the hips; in body and in face he was something of the appearance of Jim Silver, though he was less clean-cut. His companion had a rather long, pale, handsome face. He looked as though he had not been much in the sunlight. His hair was very long. He had supple hands with very long fingers. One might have expected to see him sitting at an easel painting a woodland scene rather than drawing a revolver with a practiced ease.

"Who are you, partner?" he asked as he approached.

His voice was wonderfully soft, gentle and low but that did not seem an excellent thing to Alec Gary. He



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had heard a cat purr on much the same note. In the face of the pale man's companion there was a frank and open glint of mockery.

"My name is Alec Gary," he answered. "Who are you?"

"Wilkins," said the stranger. "This is my partner, Hal Murphy."

"Or Jones?" queried Alec Gary. "Or Smith? Or Brown?"

FOR the falsity of the name suddenly rang hollow on his ear. He regretted that he had allowed his tongue to take the mastery over him.

"Wilkins" continued to regard him with a quiet eye.

"You're with Silver, are you?" he asked.

"I'm with Jim Silver," answered Gary, reassured as he mentioned the name.

For, even if these fellows were outlaws, they would be certain to respect that famous and terrible name.

"Then," said the pale-faced man, "perhaps you wouldn't mind spending a little time with us?"

"Why should I?" asked Gary.

"Because," said the other, while his companion suddenly grinned more broadly, "Jim Silver knows me, and when he comes looking for you tonight, I want him to find me in."

"Jim Silver knows you?" repeated Gary. He could understand that there was a threat in the air, but he could not make out what seemed a very twisted meaning.

The pale man kept smiling gently at him. His voice was more poisonously caressing than ever as he answered: "You see the she-wolf Gary?"

"Well?" asked Gary.

"She's bait for Frosty. She's his mate."

"I guessed at that," answered Gary, frowning.

"And I've been hoping," said the other, "that Jim Silver might come investigating at about the same time that Frosty dropped in on us. But now that you've decided to stay with us, I'll be the surer that Silver will come. Because there is one thing that one can always be sure of, when Jim Silver is in the case. He won't let his friends down. Never! If one of 'em gets in a pinch, honest Jim Silver, brave Jim Silver, noble Jim Silver will never fail to put his head in the lion's mouth to get the fellow out of trouble."

A strong chill of dread passed through Alec Gary, body and mind.

"What trouble?" he asked. "I don't follow you!"

"Don't you? Be patient, brother, be patient. If you stay here with us, you see, Jim Silver might get a wrong idea in his head. He might think that you were being forced to stay. He might think that we'd drawn guns on you, and tied you hand and foot, and that we intended to keep you until we decided how we'd cut your throat. And ideas like that are just the things to bring out all the nobility of Mr. Silver."

"This time we can't miss," boasted Joe Thurston. But he reckoned without Silvertip

Oh, I could tell you some strange stories about the ways he has walked into danger for the sake of his friends. Eh?"

The silent companion nodded and grinned. Both of them were watching Gary steadily, and a big Colt kept shifting in the supple hand of the pale man.

"Who are you?" broke out Gary suddenly.

"Why," said the pale man, "as you suggested a while ago, you might call us Smith, or Jones, or Brown, or, perhaps, Barry Christian and Duff Gregor!"

At this, as the flesh of Gary turned to stone, Gregor broke out:

"Why give him the names, Barry? That's a fool play, it seems to me!"

"Because," said Christian calmly, "after he's been used, he won't be alive to talk about us, Duff."

He made a gesture that jerked up the muzzle of the Colt.

"Put up your hands, you poor half-wit," he said to Gary. "You've walked right in on us, and now we'll stay a while."

There was plenty of fighting blood in Alec Gary. To put up his hands meant to surrender his hope of living. But not to raise them, as he plainly saw in the face of Barry Christian, meant to die at once. Besides, the evil name of the man enchanted him and killed his heart. Slowly he raised his hands in surrender.

JIM SILVER, as he went down the hillside on Parade, heard out of the north and the west a heavy rumbling, as if a great wagon were rolling over a wooden bridge, gradually disappearing.

The noise died away. It began again. Then he saw the glimmer of distant lightning above the mountain tops. Either that was a storm which would presently walk up across the sky and put out the stars, or else it was to be confined to the farther side of the range, only its head showing in thin flashes above the crest of the peaks.

He passed the bottom of the valley, and Parade started through the trees, weaving suddenly to this side and then to that, for Parade knew perfectly well that branches which he could easily clear himself might nevertheless sweep his master out of the saddle, and when Silver was on his back, the man was a part of the horse. One nervous system seemed adequate for them both. So they went snaking through the woods at a pace that would have been ruinous for any other rider on any other mount.

When they were well up the slope of the mountain, at about the place where Silver expected to find the clearing, he halted Parade, dismounted, and whispered for a moment into the ear of the great horse. Parade would stand quietly now, straining his ears to hear

from his master even the faintest and most distant whistle. And if there were a sound of footfalls coming toward him through the woods, Parade could tell perfectly if the step of his master were among the noises. Otherwise he would shift and give ground and hide himself with all the cunning of some great jungle beast.

So Silver left him and went gradually forward, listening continually for noises of any sort. Now and again he heard the voices of the dogs as they whimpered in their sleep or wakened to growl at imaginations of the night.

That was all that he could make out until he suddenly found himself clear of the trees. That was all he could make out for an instant, but dropping to one knee, he commenced to scan everything around him with care until the starlight showed him the main details.

He was on the verge of the clearing. Yonder skulked the she-wolf, with the long steel chain clinking musically as she walked back and forth. Now she lay down and gritted at the chain with her strong teeth; and out of the distance—no, it was not so very far away—Frosty's melancholy call came echoing through the woods.

Then a man's voice said: "He's on the trail now. He's pretty close, too."

The words were not what made Silver flatten himself against a tree to gain a better shelter. They were not what brought the Colt suddenly into his hand. But it was the voice that ran all through him with an electric shock of savage joy and desire.

It was the prime goal of all his questing, and he was now in reaching distance of it. It was Barry Christian who spoke there.

He could see the man, at first obscured against the shadows of the trees, but now discernible with a smaller companion at his side. Whoever it was, it was not Duff Gregor.

HE'S coming in," said the smaller man. "I thought he'd have more sense. It's a pity in a way, Barry. It's like seeing a great man throw himself away on account of a woman."

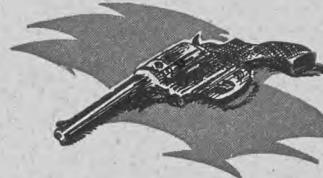
"I'll pity him tomorrow, if I can catch him tonight," answered Christian. "Whisper hears him now. Listen to her whining."

"Who gave her that name?" asked the smaller man.

"Gregor," said Barry Christian. "And it fits her. If it weren't for the chain that she carries around, we'd never hear her moving."

"Whisper!" said the other. "Well, isn't it time for you to get on guard? Isn't Silver likely to show up any moment?"

"Not for a time, I think," said Christian. "Only the devil can tell just what Silver [Turn to page 60]



Illustrated by
CLARENCE TILLENIUS



HE WOULD DO IT ALL OVER AGAIN



Crested Wheat grass grown for seed in rows is another facet of the farm business.

[Guide photo.]

JAMES RUGG, Elstow, Saskatchewan, has been a familiar figure at all seed growers' meetings in Saskatchewan for many years. He has put in 45 years farming on the prairie, and for 34 of these years has been a grower of registered seed grain.

Originally from South London, England, he came to Canada in July, 1903, from a mathematical and surveying instrument factory, in which he says he was not very well paid. For 16 months he and a friend worked on a farm at Killarney, Manitoba, and Mr. Rugg arrived in Saskatchewan in November, 1904. He started working on his dad's homestead in the spring of 1905.

Now he operates 800 acres of chocolate clay loam, classified as Elstow silty loam. It is not the best soil in Saskatchewan and is somewhat variable, some of it more resistant to drought than others. Some of the soil on higher ground is a yellowish clay which does not clean well under the plow. In earlier years, this was regarded as the best soil on the farm. Eastward in the Colonsay area, the soil is heavier and loamier, yielding about five bushels more per acre. At Elstow, the soil is what is called two-plow land, but south of Elstow the tractor handles three plows.

Mr. Rugg has been growing registered Banner oats for 20 years. This seems to be the best variety for the district, although he likes Victory. Exeter was tried but it is too weak in the straw. Mr. Rugg doesn't find it necessary to worry so much about rust-resistant oats in Saskatchewan. He has been growing registered Thatcher wheat for ten years and elite Thatcher seed for three years. He finds that Thatcher yields well and regularly and does not tip-burn. This will be his third year for registered Montcalm barley.

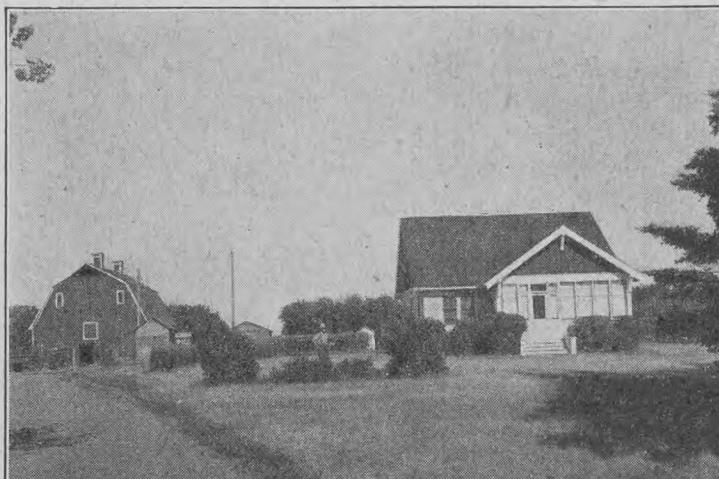
OF 650 acres cultivated on the five quarter-sections, 370 acres were in grain last year; including 170 acres of wheat, 75 acres of barley and 120 acres of oats. There were 42 acres of grass all together, principally crested wheat grass. He formerly grew Parkland brome, but found the yield to be too low and was unable to get a premium market.

Mr. Rugg grew his first registered seed crop from seed obtained from Dr. Seager Wheeler, Rosthern, in 1914. He told me he still has a copy of the 1916 report of the Canadian Seed Growers' Association, issued when Dr. L. H. Newman, who recently retired as Dominion Cerealist, was Secretary of the C.S.G.A. He was himself made a Robertson Associate in 1937. This is the highest honor within the gift of the Association, and is a recognition for long and meritorious service as a progressive, registered seed grower in Canada.

"We have had to work for registered seed," said Mr. Rugg, "but have got paid for it. Most of the work revolves around the problem of

keeping registered seed pure and also free from weeds. For all generations of registered seed, not more than one important weed seed in 10,000 kernels is permitted. This puts weed control right up to the grower."

THE new spraying with chemical weed killers has so far not been of as much help to the registered seed grower as it has been to the commercial grain grower. They are as yet uncertain as to the effect of chemical spraying on the quality of the resulting seed. Some research work is being done on this point, but especially in the case of elite seed growers, of whom Mr. Rugg is one, chemical spraying is not yet recommended. The grower of registered seed is able, by hand weeding, to take care of the odd weed throughout a field, but what he fears are patches of some troublesome weed that have a tendency to develop here and there. Mr. Rugg formerly used Atlacide for patches of sow thistle, which the chemical will control in a dry year on the higher land. On alkali flats, however, sow thistle is exceedingly difficult to control. Where wild oats are a common problem, there are always certain fields or parts of fields which require extreme care. This means hand labor, and even on a



Above: The farmstead is not only attractive looking and comfortable, but tidy.

Right: The Rugg boys do some hand weeding of a Thatcher field around a low spot.



By H. S. FRY

first class seed farm it may take as much as 10 hours hand weeding on a 20 acre field to keep them under control. "You can't touch stinkweed and Russian thistle on the larger fields," said Mr. Rugg, "you must get those on the elite plot."

Elite stock seed is the real seed growers' pride and joy. He nurses it and coddles it along like a mother. It is hand-hoed, weeded with an eagle eye, rogued severely so as to eliminate every off-type plant, and is produced generally under the strictest kind of regulations laid down by the Canadian Seed Growers' Association. The reason is that it is seeded originally from what is called foundation seed, which is produced year after year, on one or more specially designated experimental farms or stations, whose duty it is to maintain a small, select supply of the pure variety, as originated or improved by the plant breeder. From small supplies of this foundation seed, certain breeders may qualify as elite stock seed growers, and they are jealous, indeed, of this responsibility.

No man may grow more than a small area of elite stock seed, for the simple reason that he cannot take care of more. Here is where rogueing gets in its good work by the elimination of all off-type plants, or those which, for any reason at all, seem undesirable. With sufficient care in rogueing the elite seed plot, there is less need for rogueing in the first generation fields grown for commercial seed. "If you start in the small elite plots and keep them pure," Mr. Rugg said, "you can keep your field of registered seed up to standard. It pays to stay with one type."

"If I were doing it all over again, I would still go in for registered seed production," he said. "I like the work, and it has become more or less a hobby. One of its great advantages lies in weed control. I've seen neighbor's fields plowed up for wild oats and had my own adjoining fields in the same year come through without being scored for wild oats. Rogueing and weeding provided the answer."

THREE sons in the Rugg family. The eldest is married and is agricultural representative for the Saskatchewan Department of Agriculture at Wilkie, having graduated from the University of Saskatchewan in Agriculture in 1942. The other two boys were at home. All three were associated with the armed services during the war; the eldest having had C.O.T.C. training, the second son Billy, with the Ordnance Corps for four and a half years, of which one year was spent overseas; and the youngest, Barry, also overseas with the Air Force ground crew. He had signed up for Pacific service when the war ended. Mr. Rugg called attention to the fact that several younger men were starting farming on their own in the district.

Because of the emphasis placed on registered seed on the Rugg farm, no combine or swather is used. Because of the seed work, threshing is done by the separator. The farm also has one small tractor.

Water was a problem for years, but finally a dugout provided the answer. It is 150 feet long by 30 feet wide and only 5½ feet deep. However, it is located on the edge of a slough and has a heavy clay bottom. One heavy rain will fill it.

[Turn to page 57]

Growing registered seed on this Saskatchewan farm has been hard work, but satisfying, and well rewarded

[Guide photos.]

By W. L. JACOBSON

IRRIGATION was evidently used on the prairies for the first time about 1878, when a settler named John Glen diverted water from Fish Creek, eight miles south of Calgary, to irrigate some 15 or 20 acres of hay land. This historic project was evidently not of good engineering design, but nevertheless was successfully operated for a number of seasons, and interest in irrigation grew during the years that followed.

Large works were eventually built to irrigate large areas in the low rainfall area of the prairies, while many hundreds of ranchers followed the example of John Glen by building works to use water from small streams, coulees, and local run-off for growing winter feed. Most, if not all, ranchers and stockmen who have remained in the business for long in the dry areas of the prairies have used irrigation in some way.

According to a recent press release, some 1,069 small irrigation projects were constructed under the Prairie Farm Rehabilitation Act between the years 1935 and 1947. Of the total, 685 were built in Saskatchewan, 365 in Alberta, and 19 in Manitoba. With the projects previously constructed and in good standing, the total now on the prairies is around 1,500 projects.

The average size of these projects is little more than 30 acres, but individually they vary in size from a few acres to several hundred. The full utilization of these widely distributed projects affords one of the most effective means available to stockmen and ranchers of providing protection against years of drought and crop failure.

However, the value of each of the 1,500 or more small irrigation projects on the prairies must, in the final analysis, be measured by the extent to which each project is developed and utilized. This, in turn, is likely to be determined by the enthusiasm of the owners of these projects for irrigation, and their understanding of the fundamentals of irrigation agriculture.

SIMPLY stated, the object in irrigation is to keep the moisture content of the soil within the range most favorable for plant growth. If allowed to dry out, particularly during the period of more active growth, yield will be reduced. Yield and quality are likewise affected by over-irrigation. The difficulty sometimes is to know what the optimum range is, and then to irrigate so as to keep the moisture content of the soil within this range.

A rule followed by some experienced water users is to start irrigating without delay when the soil becomes too dry to form a compact ball when rolled in the hand.

The amount of irrigation to apply naturally varies widely and depends on the soil type, the crop, the time of the season, and weather conditions at the time of irrigation. However, a good guide is to apply enough water, when irrigating, to fill the soil down to the depth of the root zone of the crop being irrigated.

The practice of irrigating in excess of this is all too common and is, no doubt, the main cause of seepage and alkali problems where these occur. Very

USE IRRIGATION WATER THIS WAY

light irrigations that do not reach down to the sub-soil moisture are not effective. Plant roots cannot penetrate a layer of soil that is too dry to support plant growth, even if there is a good supply of moisture below.

Studies at Scotts Bluff, Nebraska, show that most crops on medium soil take 80 to 90 per cent of the total water from the top three feet of soil and that alfalfa takes moisture down to four and five feet. On very heavy soils, and especially meadow lands with limited drainage, roots usually feed much shallower, while sandy soils permit deeper root penetration.

The depth of moisture in the soil and depth of root penetration are obviously two helpful guides in determining the depth of irrigation to apply. The irrigator, therefore, needs to keep a close watch on the sub-soil, as well as the growing crop. Soils men like to dig a hole big enough to expose the soil profile when making a thorough examination of the sub-soil. However, for the periodical examination needed to check on the moisture content a post-hole digger is quite satisfactory. Where such equipment is not available, a very good soil auger can be made by welding a one-inch or two-inch wood bit onto a half-inch pipe, with a T on the end for turning. The

Small irrigation projects are now widely scattered over the prairies, but success depends on the right use of the right amount of water

Gravity irrigation in a garden by small furrows.

pipe should be marked off in feet so that the depth of moisture may be readily determined in the field.

THE method of irrigation to use depends mainly on topography, preparation of the land, crop grown, the amount of water available and source of supply, and also the amount of money and equipment available for developing the project.

The simplest type of projects are spring flood schemes where spring run-off from a coulee, prairie stream, or local water course is held back by dykes to flood a meadow, a patch of alfalfa possibly, or even a cultivated slough-bottom for growing some feed oats. Flood schemes comprise a substantial proportion of individual and small community irrigation projects on the prairies, and where conditions are favorable, this type of project provides an inexpensive, if not entirely efficient system for utilizing spring run-off water.

A problem common to many flood schemes results from the fact that many of these projects are on low-lying valley, or bottom land where drainage is frequently difficult.

Instances have been observed where the lower lying portions of native hay meadows have been covered with three or four feet of water for weeks. This is a misuse of water that is detrimental to both plants and soil. The better grasses give way to sedges, thatch grass, and wild barley, and in time such a project may become a liability instead of an asset.

Two suggestions are offered in the case of these flood projects. One is to limit the depth of flooding by using lower dykes built on the contour; and the other is to provide as good drainage as local topography permits, so that all surplus water may be removed as quickly as possible after the soil has been filled to the depth of the root zone. In this way the depth and duration of flooding can be better controlled.

Hay meadows may be improved by re-seeding to suitable cultivated grasses, provided the works permit adequate control over the amount

of water applied and where there is adequate drainage to take away surplus water. Without these controls re-seeding would be of little use.

Where irrigation water is stored in a reservoir, or diverted away from a stream, the works are necessarily more elaborate than in the case of the comparatively simple flood

Turn to page 42



[Pollard photo.]

Above: Elmer Wolf, Lumsden, Sask., irrigates by free flooding from a contour ditch.

Left: Irrigating bare fields is advisable only in special circumstances.



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Grist From B.C.'s Legislative Mill

Freight rates, sales tax and racial issues prominent in current political discussion

By CHAS L. SHAW

THE so-called "mountain scale" on the Canadian railroads has always baited British Columbians like a red rag to a herd of angry bulls. The scale has been in effect for a good many years and was enforced by the railroads on freight crossing the Rocky Mountains as compensation for the costs of operating over the steep grades.

British Columbia shippers have maintained in recent years that this charge is discriminatory and that it places them at an unfair disadvantage with competing interests in other parts of Canada. When on top of the mountain scale the Transport Board awarded the further increase in rail tariffs of 21 per cent it was just too much for British Columbia, and protests were promptly filed.

The Canadian government has intimated that British Columbia may have a case, and with this encouragement west coast lawyers have been busy mustering as much evidence as possible to support their argument at Ottawa.

Meanwhile some British Columbians have expressed themselves pretty vigorously on the subject. Tom Reid, the bagpipe-playing member of the House of Commons for New Westminster, says that British Columbia should retaliate by withholding all freight from the C.P.R. because of its original lack of wisdom in locating its route through such a mountainous series of grades. He doesn't think that British Columbia should still be penalized for engineering mistakes of half a century ago. On the other hand, a Vancouver shipping executive has publicly called for a boycott of the C.N.R. because it imposes the mountain scale without reason inasmuch as the C.N. grades through the Yellowhead Pass are not so severe as those on the C.P.R.

Freight rates on the railways are always a serious subject in British Columbia because the province is naturally dependent on the Rocky Mountain haul for most of its traffic, especially since there are no competing steamship lines through the Panama Canal, as there used to be before the war. Whatever happens to the freight rates is of vital concern to everyone west of the Rockies.

THE British Columbia government considers the freight rate battle so important that the new premier, Byron I. Johnson, hastened to Ottawa immediately after the session of the legislature terminated so that he could add his voice to the protest.

Premier Johnson incidentally is learning the responsibilities of his new job the hard way. It has been just one thing after another for him ever since John Hart retired and gave him the nod as his successor.

Mr. Johnson has been finding that running the government of a fast-growing province such as British Columbia is anything but a sinecure. One of the first things he discovered was that British Columbia is going to run into a deficit, after a pleasant succession of budget surpluses, if it does not create new sources of revenue.

This discovery led to his advocacy of a three per cent sales tax and this is probably the outstanding piece of legislation to be passed by the House at Victoria this year. The tax isn't likely to be a popular one and it encountered a good deal of opposition in the legislature, but sales levies do bring in the money and it is expected that about \$15,000,000 will be added to the province's income during the first year of the tax's operation. The new tax covers almost everything from restaurant

meals (if they cost more than 50 cents) to automobiles.

However, the sales tax was only one of several measures that might have made the legislative session notable in itself. For one thing, the government put through a hospitalization scheme that will probably take effect in 1949. It also tightened up its labor legislation and while making certain clauses of the contentious Bill 39, passed last year, more workable, it insisted on the retention of the provision that strike votes by unions must be government supervised.

In other words, it will no longer be possible for people to say when a union walks out that the balloting was "rigged" by a few radical leaders. The plea of several employing groups for a clause outlawing Communists in labor unions was not accepted, however.

WHEN Premier Johnson went to Ottawa he didn't plan to confine all his time to a discussion of freight rates. One of the things he had on his schedule was an attempt to work out a new financial deal between his province and the federal authorities because it looks now as though the arrangement which ex-Premier Hart negotiated more than a year ago and which everyone hailed with delight as a wonderful bargain has been actually anything but that.

When Mr. Hart was able to announce that Ottawa had agreed to pay the province \$22,000,000 a year in return for the province's annual payments of income and corporation taxes and succession duties the British Columbia people thought that this was a handsome sum and adequate compensation for the loss of the other revenues.

It hasn't worked out that way because British Columbia is currently paying into the federal treasury more than \$140,000,000 a year. In other words, it is getting back only about one dollar for every six it contributes to Ottawa, and Premier Johnson as well as most other British Columbians fail to see the fairness of such a division. They are beginning to realize that perhaps some of the eastern premiers were smarter than they seemed to be at the time when they refused to make a deal with the federal finance department.

Racial issues have been prominent west of the Rockies in recent months. When the federal by-election is held in Vancouver Centre shortly Chinese will vote for the first time in generations. They were given the right to vote, along with East Indians, by the legislature last year. The Japanese, however, are still without the electoral privilege and they have made a formal protest to the legislature.

The Japanese also feel that they are being unfairly discriminated against in other matters, such as employment. They claim that Canadians of Japanese ancestry have made good citizens and that they should have equal opportunity. And, of course, they feel badly that the Canadian government has not yet relaxed the regulations which prevent Japanese from entering the Pacific coastal area, despite the fact that more than two years have elapsed since the war ended. It would not be surprising if the gradually softening public attitude would result in relaxation of this policy towards the Japanese in Canada by next year. But apparently not in 1948.

BRITISH COLUMBIA has also been hearing a good deal about the Doukhobors. A year ago, after a series of dynamiting and other outrages, the government appointed Judge Harry Sullivan to make a general investiga-

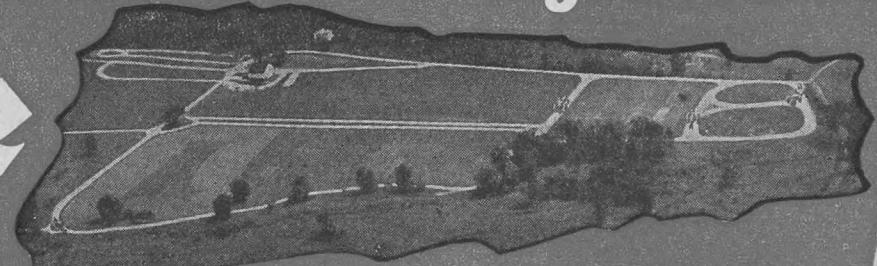
(Turn to page 72)

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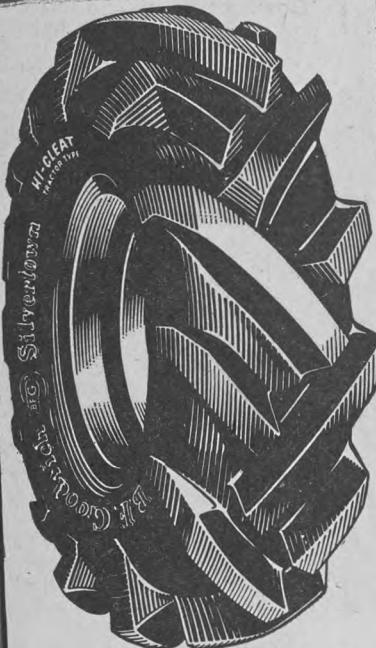
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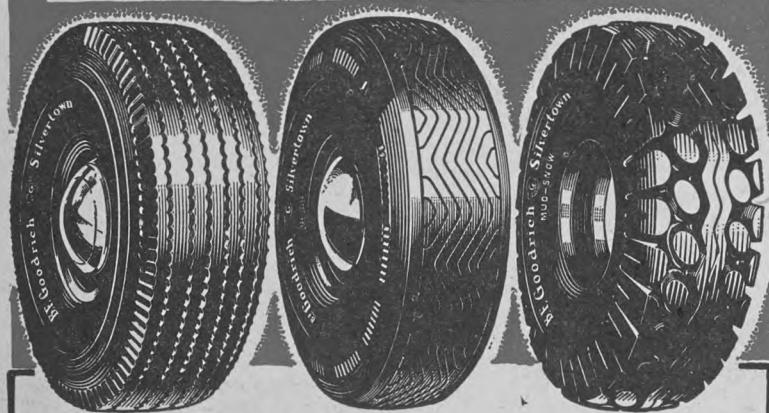


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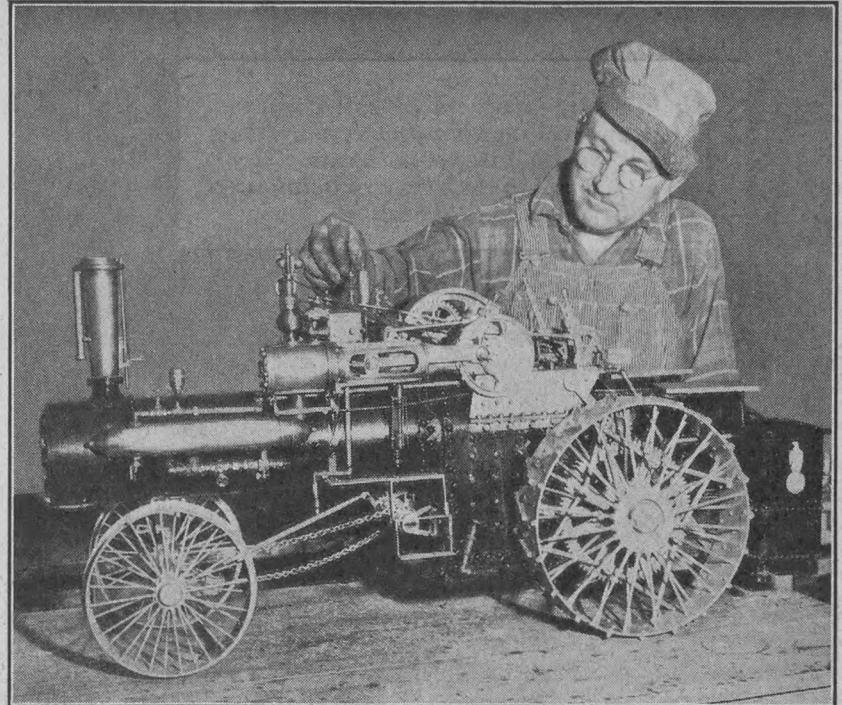


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B.F. Goodrich TIRES



[World Wide photo.
Operated with compressed air or charcoal this 41-inch, 200-lb. steam tractor model was made by an American machinist, Warren A. Taylor, in his home workshop.

European Recovery Program

THE United States will spend something over \$8 billion within the next year in its cold war against Russian Communism. Of this, \$5.3 billion will have been spent in the European Recovery Program, on behalf of the 16 co-operating European countries. In addition, these countries will also receive over \$900 million from private loans, the world bank and the export-import bank. At least \$1.2 billion will be spent in the U.S.-occupied countries, Japan, Korea, Germany and Austria, besides \$275 million to Greece and Turkey for military aid, \$463 million for aid to China and \$60 million to the United Nations Children Fund.

Of the \$5.3 billion in the ERP, \$2.5 billion (almost half) will be spent on foods. Other probable expenditures on items related to agriculture are tobacco \$200 million, cotton \$550 million, nitrates \$30 million and farm machinery \$100 million, making a total of \$3.3 billion for these items alone.

Of the \$5.3 billion, The United Kingdom will probably receive \$1.4 billion, France \$1.125 billion, Germany (Bizonia) \$725 million, Italy \$675 million, Netherlands \$550 million, Belgium-Luxemburg \$250 million, Austria and Greece \$140 million each, Denmark \$125 million and Ireland \$120 million. Germany (French zone), Norway, Sweden, Iceland, and Germany (Saar) will receive between them a further \$128 million.

Italy, for example, consumes about 300 million bushels of wheat, of which approximately 80 million bushels must be imported. In addition, Italy plans to import 12.5 million bushels of coarse grains, probably from Poland and nearby countries, 40,000 metric tons of meat principally from the Argentine and Uruguay (perhaps some from Canada), and 50,000 metric tons of potatoes.

Australia and the Wheat Agreement

PRICES paid for Australian wheat in the international agreement during the year beginning August 1, 1948, will vary from \$1.84 to \$1.92 per bushel according to the Australian Prime Minister. During the last year of the agreement, the price will vary from 96 cents to \$1.04 per bushel. Since all prices are on the basis of in store at Fort William, Canada, this means that Australian and United States prices will vary according to freight charges and whether sales are to near or distant countries.

Australia expects a surplus for export during the present crop year of 144 million bushels. Of this amount, 80 million bushels are priced to Britain at \$2.72 per bushel, 25 million bushels to India at \$2.96 per bushel, 4.5 million bushels to New Zealand at about \$1.00 per bushel. Export wheat has also been sold by Australia to other countries at prices ranging around \$3.21 per bushel. It is expected that about half the wheat for Britain and India will be shipped under the contract prices by August 1, 1948, the balance being affected by the prices arranged under the international wheat agreement.

Incidentally, a committee appointed by the Australian government to investigate the cost of producing wheat has found that the cost delivered on siding, ranges from 76 cents to 96 cents per bushel. In estimating these costs, the committee calculated a cash wage to the farmer of \$21.10 per week, in addition to such free rent as he would ordinarily get from the fact that his house is a part of the property on which he works, the fact that the farm business would become responsible for paying taxes and insurance on the house, and also that he would obtain free water supply and other income in kind grown for consumption by the farm family.

Fine Paper Made From Wheat Straw

FINE paper pulp can now be produced from wheat straw at lower chemical cost and in significantly higher yields than was formerly thought possible. It is estimated that last year 95 million tons of wheat straw were grown in the U.S. and that the amount burned and wasted would have been sufficient to produce 20 million tons of cellulose pulp, an amount equal to the total requirement of the United States.

Hitherto, economic and technological considerations have prevented straw being used for this purpose. Yields of 50 per cent of screened wheat pulp can be obtained, which is five to ten per cent higher than other processes operating on straw or of most processes using wood. One difficulty is the cost of procuring clean straw. Manufacturers of farm equipment have been called into consultation in the United States, and co-operation between the straw board industry, chemical fungicide manufacturers and the Peoria Laboratory of the U.S. Department of Agriculture has developed in order to cut down fibre

losses in storage of straw and to improve straw quality.

Wheat straw pulp is excellent for producing well-formed papers, and it is believed will find a logical use as a blend with several kinds of wood pulp to produce magazine, book, writing and other papers.

Canada is said to be drastically limiting pulpwood export to the United States where pulpwood species are being used faster than they are being grown. In Europe, book and writing papers have been produced in several countries from wheat and rye straw. During the war, England used a considerable amount of straw for fine paper, and in most South American republics, most of the paper used is made from straw.

Feeders' Day, June 5

FOR 26 years, feeders, breeders and livestock enthusiasts in the Province of Alberta have attended the annual Feeders' Day at the University of Alberta in large numbers. On that day, the University stock farm is the scene of much useful activity, during which the able members of the staff of the Department of Animal Science review the experimental work under way at the institution, and advance their conclusions, if any. This year Feeders' Day at the University will be held on Saturday, June 5, and all of those within convenient driving distance will do well to mark this date on the calendar and make plans to be in attendance.

Supply of Fats and Oils

THE prospects are that the world's exportable supplies of fats and oils may possibly decline during 1948. The present acute world shortage is due to reduced export to deficit countries from former Far East and African surplus-producing nations. The result is that international supplies are about 20 per cent below pre-war. The world supply is estimated at about 18 million short tons, which compares with 21.6 million tons for the 1935-39 period. Exports remain about 40 per cent under the pre-war level.

Before 1939, European countries supplied more than two-thirds of their own requirements. In 1947, selective production was only able to supply 40 per cent of Europe's pre-war need, because of the general cereal and seed shortage following the 1947 harvest. Prospects for 1948 are said to indicate a further decline in the production of fat and oil commodities.

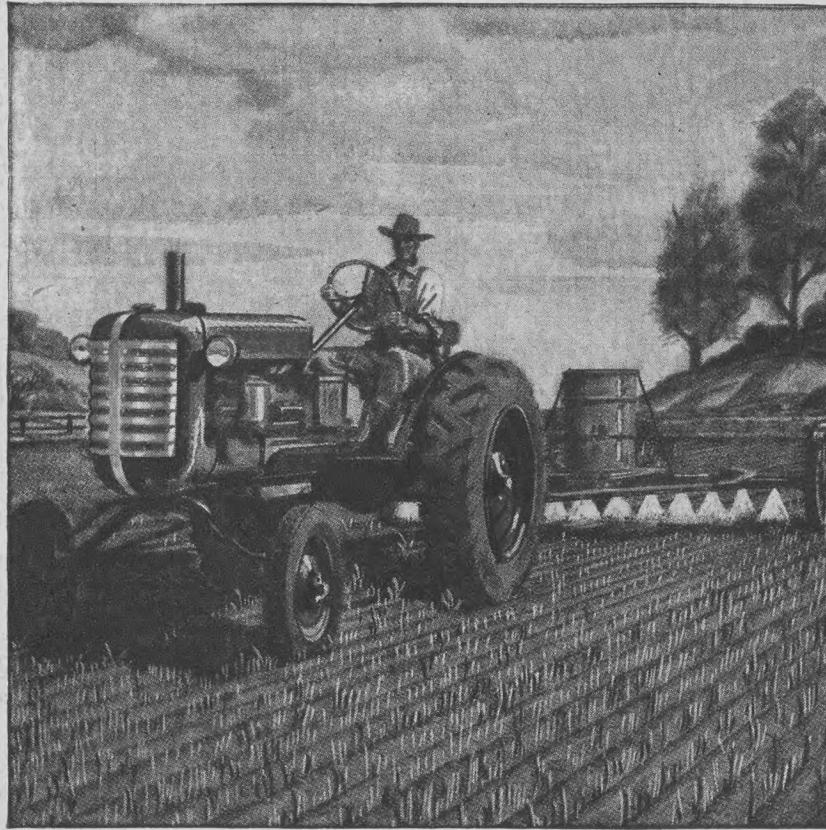
Bacon Price Increased

THE Canadian Meat Board announced on April 17 that it would pay an addition of 25 cents per 100 pounds for export bacon purchased by the United Kingdom. Since Monday, April 19, the price per 100 pounds for No. 1 selection, A-grade Wiltshire sides of sizable weights, delivered Canadian seaboard, has been \$36.45. This additional payment has been made possible by decreased operating costs, following peacetime resumption of more regular shipment and resulting from the prompter handling of bacon. These developments led to an increase of Meat Board reserves sufficient to warrant the announced price increase on bacon.

Livestock Numbers

RESULTS of the December livestock survey by the Dominion Bureau of Statistics were released in April, and show cattle numbers at 8,943,500, for a decline of 72,000. Of this number 366,600 were milk cows, down 50,000 since December, 1946. In Saskatchewan, where the largest increase is shown, dairy cows were down 12,000 and other cattle up 57,000 for a net increase of 3.6 per cent. In Manitoba dairy cattle were

When's the best time to KILL WEEDS?



Many weeds can be easily and completely sprayed to death by following general directions on Dow Weed Killer packages. The best time to kill weeds is determined by their type and stage of growth. Usually annual weeds are most easily controlled when in the seedling and young plant stage; and best results with perennials are obtained when treated in an active growing condition. For specific information consult your local agricultural representative, your experimental station—qualified dealers and service organizations—or write direct to Dow.

Use the right

Dow Weed Killer

2-4 DOW WEED KILLER

Low cost. Highly recommended for killing many weeds in lawn and other turf areas, in pastures, and in small grains where legumes are not interplanted. Does not kill common grasses. Available both as a liquid and a powder. Follow directions.

DOW CONTACT WEED KILLER

"Chemical Mower" for weeds along canals, ditch banks, fences and roads. Kills most annuals. Destroys other weeds and grass above ground, and leaves roots to prevent soil erosion. Follow directions.



ESTERON 44—A POWERFUL 2, 4-D WEED KILLER

Especially useful against hard to kill weeds and woody plants such as wild rose, poison ivy, honeysuckle, locust, and wild cherry. Desirable for use on cutover and range land and in ditch banks and fence rows infested with woody species. May also be used on small grains.

DOW SELECTIVE WEED KILLER

Kills or effectively checks growth of many annual weeds in flax, peas and small grains even where legumes are interplanted. Complete directions on label.

This will be a very bad year—for weeds!

Chemical Weed Killers, developed by Dow, are already hard at work in all sections of the country. The weed problem is being

attacked and is being solved in the easy, effective, economical way—not the hard, costly way of mowing, cultivating, digging. You simply spray and the chemicals take care of the weeds. Dow Weed Killers do the job with a minimum of labor. For best results select the right weed killer.

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FIELD NOTES

SOIL FUMIGANT DEVELOPED TO CONQUER NEMATODES AND WIRE WORMS

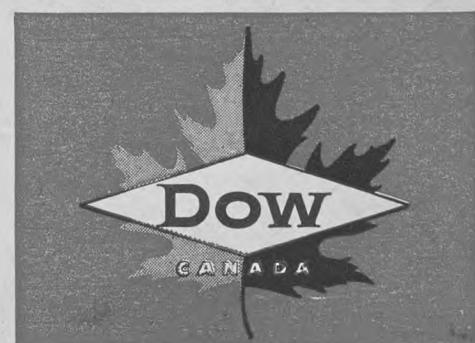
Nematodes and wireworms, feeding on underground portions of plants, cause farmers the loss of several million dollars annually in crop damage. Dow researchers tackled this problem and developed a liquid soil fumigant called Dowfume W-40. Its active toxic ingredient is ethylene dibromide. A companion product to Dowfume G, developed mainly for greenhouse use, Dowfume W-40 is now being used successfully for the control of nematodes and wireworms in many agricultural soils. Write for information.

DDT CREDITED WITH INCREASED BEEF PRODUCTION

DDT is credited with adding valuable pounds to Canadian beef and milk production. By controlling flies, lice and ticks on beef and dairy cattle, gains of from 30 to 60 pounds of beef per head were reported recently. Present recommendations are a minimum of 4 pounds of Dow DDT 50% Wettable Powder in 100 gallons of water. Used in a power sprayer at the maximum rate of 2 quarts per mature animal, this formulation is sufficient to give excellent protection for 2 or 3 weeks. The addition of underline spraying is reported to increase protection as much as a week. Livestock growers are also spraying barns and sheds.

NEW INSECT CONTROL NOW POSSIBLE WITH DOWKLOR

DOWKLOR is Dow's trademark name for a powerful new insecticide, chlordane, recently added to this company's extensive line of insect control products. Both in exhaustive laboratory tests and under practical field conditions, DOWKLOR has proved itself superior to most presently available materials in the control of most crawling insects. DOWKLOR is a triple action insecticide, killing insects by direct contact, by stomach poisoning, and as a fumigant vapor rising from spray or dust deposits on treated surfaces. A great advantage is that it does not repel or scatter the insects, nor is it dependent on their feeding habits. It has no objectionable odor or color, leaves no great amount of residue, and is not hazardous to men or domestic animals when used as recommended. Not only has it given outstanding results in control of industrial, institutional and household industrial pests—it has been proved effective for destruction of grasshoppers and other agricultural insect menaces.



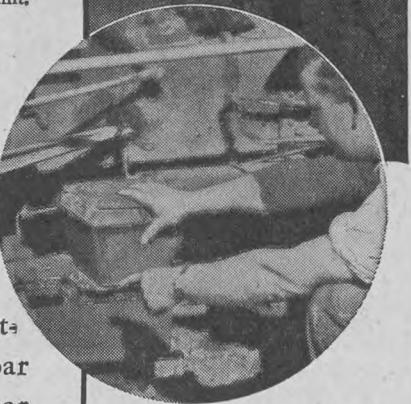
This Farmer thinks corn should be planted Electrically-

Uses battery on tractor to Operate Novel Corn Planter



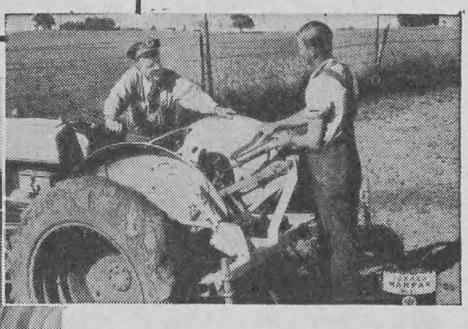
Demonstration of the electric corn planting unit. Press the button and the corn drops out.

One of the newest ideas in farm machinery developments is an electrically operated corn planter. The current is supplied by the battery of the tractor. The planter units are mounted on a bar between the front and rear wheels. The advantage is compactness of units and visual checking of planting operation. Here's a discovery that will soon be shared with farmers all over Canada . . . just as they share the knowledge that it pays to farm with Texaco Petroleum Products.



The electric corn planter as it appears when installed. Several planting units can be installed on the cross bar under the tractor.

The engine of this new tractor will stay cleaner longer and deliver more power because it's getting McColl-Frontenac's premium motor oil. It is wise and profitable for the farmer to use the petroleum products designed to give the best performance and protect equipment.



This farmer finds by using Texaco Marfak . . . the super tough lubricant that clings to bearings longer . . . he cuts down on unnecessary repairs and maintenance. That's because Texaco Marfak gives greater protection against wear . . . stands up under the worst punishment.

IT PAYS TO FARM WITH

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down 10,000 and other cattle up nearly 8,000 for an overall increase of 9/10th of one per cent. In Alberta, milk cows were down 2,000 and other cattle 100,000, for a net decrease of 6.3 per cent. Since December 1, 1944, cattle in Canada have decreased in numbers by 1,314,000.

Sheep in Canada decreased during 1947 by 195,500, or 11 per cent. The decrease in Alberta alone, where it was most serious, amounted to 77,100, or 17.2 per cent. The percentage decrease in Saskatchewan was seven per cent and in Manitoba 13.2 per cent, to give sheep populations as at December 1 in Manitoba of 86,500, Saskatchewan 177,200, Alberta 372,000 and British Columbia 64,900. Ontario now has the largest sheep population of any province in Canada, whereas a year ago Alberta had the most. Canada's sheep population since December 1, 1944, has decreased by 1,235,000 head, from 2,822,000 to 1,587,000.

There were 11.8 per cent fewer horses in Canada last December than the year before. Totals have been decreased from 2,243,200 to 1,979,400. Saskatchewan still has more horses than any other province, leading with 486,600, or 13.3 per cent fewer than a year ago. Ontario follows with 451,000 or 5.5 per cent fewer than a year ago; Alberta has 393,800, or 10.5 per cent fewer; and Quebec 315,700 or an even 20 per cent fewer.

British Long-Term Food Plans

IN 1947, Britain was dependent on hard currency or dollar countries to the extent of about 47 per cent of her imported food supplies. It is estimated that during the first half of 1948 she will need only 25 per cent of her imported food from such countries, since she will buy about a third more from the sterling area, and something over 50 per cent more from medium and soft currency countries. This means, in the words of the Minister of Food, Mr. Strachey, that "we shall actually import in the first six months of 1948 a two per cent lower proportion of our foodstuffs from dollar countries than before the war."

A whole series of negotiations for food has been undertaken with European countries, and in the past nine months trade treaties were concluded with Denmark, Poland, Holland, Italy, Hungary, Portugal, France, Spain, Iceland and Eire for foodstuffs which will gradually increase in quantities. In addition, a considerable number of Ministry of Food representatives have visited Australia and an agreement has been negotiated for a supply of Australian eggs. Sir Henry Turner, director of meat, has been engaged in increasing supplies of pig meat over the next five to ten years.

Representatives of the Overseas Food Corporation have negotiated a tentative agreement with the Queensland (Australia) government for the production of coarse grains and pig meat. In some cases, the Ministry of Food reached the conclusion that no amount of inducement to assist producers would yield the necessary supplies so that a special corporation, called the Overseas Food Corporation, has been set up under the Overseas Resources Development Act and will be used for the development of agricultural resources wherever opportunity offers. This corporation is responsible for the production of peanuts in East Africa and will also contribute four-fifths of the capital necessary to develop the \$8 million Queensland British Food Corporation, which will produce pigs, coarse grains and probably sunflowers.

A.I. In Britain

CATTLE breeding by artificial insemination is making rapid strides in the United Kingdom, owing partly to encouragement by the government

and operation of nine breeding centres by the Milk Marketing Board. A survey recently conducted reports that about 60,000 inseminations of all breeds of cattle occurred during the year. Of these, 25,500 were made at the nine breeding centres operated by the Board.

Of the 69 bulls in use at these centres, 32 were Shorthorns from which 10,000 inseminations were made, and 22 were Friesians (Holsteins) responsible for 11,500 inseminations. The largest number of inseminations from one bull was 1,360, and the average was 572. Additional A.I. centres are planned by the Milk Marketing Board, and of these 11 are in some stage of organization. The scheme operated by the Board is guaranteed against loss by the British Treasury until 1950.

The standard charge is 25 shillings (about \$5.00) per cow, including three inseminations if necessary. Service of a particular bull may be secured for a charge of about \$12 per cow. During the year under review, income averaged about \$5.30 per cow, and expenses about \$5.50 per cow.

New President, A.I.C.



Dr. R. D. Sinclair.

DR. R. D. SINCLAIR, Dean of the College of Agriculture, University of Alberta, has recently been elected President of the Agricultural Institute of Canada by cross-country mail ballot, for the year 1948-49. He succeeds Dr. J. F. Booth, head of the Economics Division, Dominion Department of Agriculture, Ottawa, and will take over his new duties at the time of the annual convention of the Institute to be held this year June 21-24 at the Ontario Agricultural College, Guelph.

Dr. Sinclair was born at Innisfail, Alberta, in 1892, graduating from the University of Alberta in 1918, and acquiring more advanced training later at Iowa State College, the University of Aberdeen, Scotland, and at Cambridge University, England. He first taught at the Olds School of Agriculture in Alberta, later becoming Associate Editor of the Farmer's Advocate at Winnipeg, and joined the staff of the University of Alberta in the autumn of 1922. He has specialized in animal science and, in addition to being Dean of the Faculty of Agriculture, is head of the Department of Animal Husbandry at the University.

The new President of the Institute is a member of the National Advisory Committee on Agricultural Services, chairman of the National Swine Committee and is widely regarded as an agricultural scientist of outstanding ability and wide popularity.

LIVESTOCK



[Guide photo.
As cows milk longer, yield decreases, but the fat content tends to increase. Many other factors also influence the percentage of fat in milk.

Dual-Purpose Experiment

University experiment illustrates importance of good milk yields

IN 1941-1942, the Department of Animal Science, University of Alberta, began an experiment with a herd of Shorthorn and Red Polled cattle, consisting of 10 Shorthorn grades and two purebreds, and six Red Polled cows, all purebred, with a view to determining the economics of building up a combined milk and beef herd on Alberta farms. The original cows were three and four years of age, carrying their second calf, and the average purchase price was \$63.00 per head. All animals of both breeds were sired by purebreds of the breed, and all animals had also passed a clean test for tuberculosis before delivery to the University.

At the time it was not feasible to obtain a blood test for Bang's disease, and consequently three Shorthorns and three Red Polled cows aborted during the five years of the experiment. Two cows were disposed of during the experiment as the result of udder trouble, so that 16 of the 18 cows completed the five years.

Over the five-year period, the average gross income from dairy products was \$108.07 and from beef \$71.25, making a total of \$179.38. The average feed cost for dairy products was \$42.75 per cow per year and the average feed cost to produce beef was \$41.37 per cow per year, making a total of \$84.12. Thus the average net income from dairy products was \$65.32 per cow per year. The net in-

come from beef was \$29.89, making a total from beef and dairy products of \$95.21.

In all, the 16 cows had 60 lactation periods and 46 calves were marketed, for a calf crop of about 77 per cent. The cows produced an average of 6,166.8 pounds milk per year and 258.4 pounds butterfat. The calves were marketed as finished cattle at 448.5 days, averaging in weight 786.6 pounds, which meant production of 645.5 pounds of beef per cow per year.

The average cow in the experiment consumed one and one-quarter tons of hay, about three tons of silage, 22 bushels of grain, pasture for five and one-half months and an average of 11 pounds of bran. The calves from birth to market ate about one ton of hay, 40 bushels of grain, 2.3 bushels of flax, 2,711 pounds of milk, of which seven-eighths was skim milk, and were on pasture between five and six months.

On the whole, the University reports the experiment as having been fairly satisfactory. The importance of reasonably high milk production is emphasized by the fact that over the five-year period, approximately 75 per cent of the net income from the herd came from dairy products. At the same time, the average selling weight of the calves, which were all sired by good, typey beef bulls, compared favorably with calves of strictly beef breeding.

Livestock Improvement Is Slow

Animal breeders can make improvement possible faster than farmers adopt new methods

EVERY person interested in livestock must have commented, at one time or another, on the many years of work which seem to be necessary in order to bring about any real improvement in livestock quality. The reason for this is not so much that animal breeders do not know how to improve livestock, but that the average livestock raiser is so slow to put into practice what is known about livestock improvement, even after many years and the many thousands of repetitions of advice. One has only to look at the numbers of low-grade cattle, hogs, sheep and poultry that are marketed every year on any public market, to realize that we have still a long way to go in livestock improvement generally.

Western Canada, of course, is not alone in this situation. A year or two ago a prominent British livestock authority commented on the very small

amount of improvement that had actually been made in British livestock in the last hundred years. He estimated it as somewhere in the neighborhood of five per cent, which, is to say the least, remarkably slow progress. Britain has long been regarded as the stud farm of the world, and many of us who have never been to Britain are inclined to think that all British livestock must be good. This is, indeed, far from the truth.

It would appear that the animal breeders—that is to say, the people in our institutions and universities—are prepared to bring about improvement in type and conformation as well as in utility qualities, if they are given the opportunity. For example, a great deal has been written in the last year or two about the new Minnesota No. 1 and No. 2 pigs that have been originated by Dr. L. M. Winters of the University of

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Give Better Results**

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The Ogilvie Flour Mills Co. Limited,
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We received over 370 chicks on March 18th. As your field man praised your Miracle Feeds so highly and stated how well our chicks would develop on this feed, we thought we would try it.

We can say that any statement that he has made with respect to the feed has been lived up to. We are more than satisfied so far with the results and can say that our mortality has been exceptionally low, only 10 so far, of which five were killed because they were runts.

At the present time the chicks are one month old and are better developed for this age than any we have previously had.

We intend using Miracle Growing Mash and I am sure that we will have just as good results as we have had with the Miracle Chick Starter.

We are keeping records on this particular bunch and will let you have a copy when completed.

Yours truly,
(signed)
Mrs. H.R.H.

(Original on file.)

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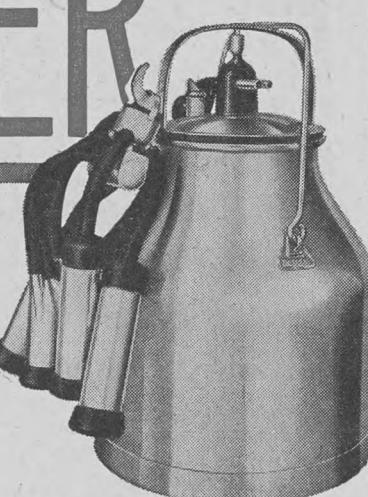
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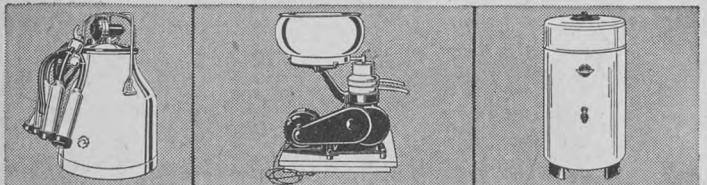
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Another great new De Laval Milker for better milking performance. Stainless steel units.

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Built especially for the smaller herd owner to give him cleanest skimming and longest service at lowest price. Made in four sizes.

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Minnesota. Dr. Winters has recently made this unequivocal statement:

"If given sufficient funds and no interference, I can, by using the same methods used in making our Minnesota No. 1 and No. 2 strains, make a new breed of swine in seven years, a new breed of sheep in 12, and a new breed of cattle in 15 years. Naturally, some limitations have to be placed on what will be bred in the strains, but they will within reason be 'tailor-made'."

We have had reason in recent years to appreciate what the plant breeder can do in developing new varieties for specific purposes, such as rust-resistance and resistance to other diseases. We know, too, that in the past it has taken many long years to develop any of our present breeds of cattle. It may therefore be surprising to learn from a well-known animal breeder that new breeds of livestock can be brought into existence in such short periods of time.

However, there is a catch in Dr. Winter's comments. He prefaced his statement by saying, "If given sufficient funds and no interference . . ." Sufficient funds, in this case, must mean enough money to do the job, regardless of the amount. No animal breeder in this country has at his disposal anything like sufficient funds in this sense, nor in all probability has any animal breeder in the United States. This will always be a limiting factor in the success of animal breeding, until such time as governments, the public generally, and farmers in particular, are ready to support the work of agricultural scientists to the point where they can make their best contribution to agricultural progress.

None of our western universities is adequately supplied with funds to prosecute agricultural research in the sense that the scientists of these institutions are able to do their very best work. They are only adequate in the sense that the guardians of the public funds consider them fair in relation to the total money available.

Notwithstanding what the animal breeder could, or does do, the fact remains that livestock improvement rests more with the individual producer than with the scientist, which is an argument for making far more use than is made at present of the information already available.

Colostrum Cheese Is Good

SOME time ago you ran an article on colostrum, so thought maybe it would be interesting for you to hear how we Norwegians were taught to use it.

My folks came to Wisconsin about 100 years ago, and believe me they never threw away any colostrum. No, sir! Mother always put it in earthen pans and just set it in a warm oven, added a little salt, and after a while she would have a panful of the whitest cheese you ever ate. (The cream turns yellow but leave it in the oven until browned crisp. Test with straw as for custard.) And eat it! Boy, I have taken on feeds big enough for a lumberjack and never had a tummy ache.

It gets firm after it cools off, so just dig out a big chunk, put on some sugar, cinnamon or nutmeg and rich milk and go to it. Easiest thing to digest, I believe, judging from the big feeds I would take on after coming from school.

True, you can't use it for cooking, as it coagulates, because nature has put the rennet into it to make it easy for the calf to digest.

And you can't very well feed it to anything, as it is too laxative. Most calves and colts are more or less constipated, especially here in the dry belt where the cows and mares go on dry feed and the calves and colts need the laxative effect of colostrum at once. I lost one calf and two colts before I got wise, so now I always give colts an injection of soapy water the first thing and help them get a drink of new milk. Last winter I had two unexpected colts

which would have died if I hadn't given them an injection, as they were just loaded with little hard, dry balls as hard and dry as prunes.

I have often told Canadians about using colostrum and most of them would want to gag. One rancher said, "Those Wooden Heads eat anything." Well, that may be true, but it is silly to think it's not clean, as nature doesn't do things like that. As I said, you can't use it for cooking, as it curdles, but Mother used to make rennet out of the calf's stomach or paunch, so we learned why you can't cook with it when we saw how Mother put rennet into milk to make cheese.

If you don't dare to eat it yourself, you can make a lot of food for the dogs, cats, chickens, pigs, as it's not laxative after making into cheese. No doubt some enterprising man will start a factory where cows are plentiful, make cheese, dry it, make it into powder, mix in a little corn starch, put it in a nice box, put a picture of a nice baby on the outside, and ask a big price for it. I don't doubt it would be a good product.

Or they would maybe do well by putting my picture on it, as I was brought up on it and didn't do too badly for a long time. One Canadian doctor said I had the best body he had ever examined; and while it is worn out now, I still come close to the 200 pounds so it didn't interfere with my growth. As one examiner said in World War I when he saw my body, "Man, you'd make a lovely soldier." — Emil Lounson, Bindloss, Alberta.

Some Points Favoring Sheep

IT doesn't take much money to start a small flock of sheep. Aside from this there are a number of advantages which sheep possess, such as the fact that they provide two cash crops a year, from wool clipped in the spring and the sale of lambs in late summer or early fall.

Those who know most about sheep claim that there are no animals found on Canadian farms which can be reared on such a high percentage of common pasture and rough feed. Sheep can salvage a great deal of the grain left on stubble ground, and are able to get along well on volunteer growth after harvest and when the grass fields have been clipped. Likewise, it is contended that they will give better returns on rough and broken pasture land than other farm animals.

Sheep seem to like and do well on almost all kinds of plants, though they do prefer the finer grasses and clovers. Similarly, they do not need expensive shelter. As long as their winter shelter is windproof and well-lighted, and is on a sunny, dry location, they are satisfied.

Palatability of Prairie Grasses

ON what are called our short grass areas, the grass grows only a few inches in height. Yield of forage, therefore, is very low, but its nutritive or feeding value is proportionately high. In areas where there is more rainfall, grasses grow longer and yield is much higher, but the nutritive value of the grass is not as high.

The Dominion Experimental Station at Lethbridge recently reported some palatability ratings for different grasses, that were made in the Northern Great Plains area of the United States. These show that Kentucky Blue Grass, for example, has a palatability rating of 70 for cattle and horses and 60 for sheep, which is the same as some of the smaller blue grasses found under range conditions. Blue grama grass has the highest palatability of all range grasses and equals that of timothy, rating 80 for cattle and horses and 70 for sheep.

Bluestem wheat grass, or blue-joint, is rated 70 for cattle and horses and 50 for sheep, which is the same as Idaho fescue and crested wheat grass. June grass rates the same for sheep, but only 60 for horses and cattle. Brome, on the other hand, while rating only 50 for

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- AND A "NEW DAY" IN TRUCK VALUE!



Now you can know true on-the-job truck value with these new Chevrolet trucks for 1948! They're the lowest-price line of trucks in the volume field with the latest and greatest features of Advance-Design — features that provide new operating ease and convenience and make every invested dollar count by putting new high value to work! See these new trucks now at your Chevrolet dealer's.

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Grades seem to level and loads lighten with the new Chevrolet-developed SYNCHRO-MESH 4-SPEED TRANSMISSIONS in heavy-duty models that provide greater operating ease and efficiency.



Mounted on the steering column, the new Chevrolet GEARSHIFT CONTROL offers new convenience and ease, in all models with 3-speed transmission.



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- The Cab that "Breathes"** — Flexi-Mounted cab — Uniweld, all-steel cab construction
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- Super-strength frames — Full-floating hypoid rear axles — Specially designed hydraulic truck brakes — Standard cab-to-axle length dimensions permitting interchange of bodies — and many others.

*Fresh air heating and ventilating system and rear-corner windows optional at extra cost.

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sheep, is worth 80 for horses and cattle. Spear grass rates as high for horses and cattle as June grass, but only 40 for sheep. Rough fescue and Perry's oat grass rate only 20 for sheep, but 40 and 50 respectively for horses and cattle.

Reference is also made to a Montana study, which shows that the protein content of crested wheat grass may vary from as low as 2.51 per cent in winter, to as high as 25.07 per cent in the spring. Even by July it may drop as low as 5.71 per cent. Native grasses also decrease in protein content by mid-summer and still further in winter, but the Montana figures show that native grass still had 7.73 per cent of protein in July, though it dropped to 3.49 per cent in winter.

Feed Grains and Pigs

IT is cheaper to send a pound of live hog to market than it is to send 4½ pounds of grain, which is one of the arguments for using as high a proportion as possible of feed grains on the farm, and feeding them to hogs. The different grains, however, have different degrees of suitability for hog feeding.

Barley is undoubtedly the best all-round feed grain for production of bacon hogs, and oats the least desirable. Barley has about as much protein as oats and has more carbohydrates, or starch material, that is easily digested. It is therefore a good fattening grain. Oats have from 10 to 15 per cent of fibre, which is hard to digest and, if fed to weanling pigs, is likely to produce scours, indigestion and curly hair. At no time in the pig's life should more than 50 per cent of the ration consist of oats, since too many oats for young pigs result in unthriftness and, in market hogs, tends toward lack of finish.

Wheat, where it can be fed economically, is a good feed for hogs, but tends to be more fattening than barley. Good feed wheat for putting on fat is just about equal, pound for pound, to good wheat or barley. When fed to pigs, however, wheat should be ground coarsely, or rolled, and never fed as a fine, floury meal.

Rye is less palatable than most other grains and, like oats, it should never constitute more than half of the grain ration. When fed alone it is not very growth promoting and is not good for putting on finish.

The type of screenings known as standard recleaned screenings, which consist mostly of wild oats, wild buckwheat and broken or shrunken wheat (free from small weed seeds) are about equal to grain in feeding value.

H. E. Wilson, of the Lacombe Experimental Station, says that except for getting weanling pigs away to a good start, shorts and middlings generally cost more than their feeding value will warrant, unless they can be purchased at about the same cost per pound as coarse grains at the farm. They are,

however, highly nutritious and contain very little fibre. Bran also is relatively expensive, though high in protein and phosphorus, and of a laxative nature. It is particularly valuable when fed for a few days before and after farrowing, to eliminate danger of constipation and fever in brood sows.

Warble Fly Season

WARBLE grubs will continue to show up on the backs of cattle until late June or early July. The only method of control of these costly insects is a monthly treatment with Derris powder solution.

In small herds, individual hand treatment is recommended up to 100 head, but for larger herds a power sprayer is faster and more economical.

For hand treatment, the Derris powder preparations are different from those suitable for power spraying. Directions on the package should be closely followed. A single warble grub may develop into a fly which will lay as many as 200 eggs, so that every grub which is allowed to emerge from the backs of cattle and fall to the ground alive is a potential source of loss to the owner. This loss results from damaged hides, slower gains with beef cattle, loss of milk production in dairy cattle and inferior carcass quality.

Constipation in Pigs

OUTSIDE of disease and internal parasites, constipation is possibly the most frequent cause of unthriftness in pigs. Constipation is usually indicated by the small round pellets found in the manure, these commonly being a bit hard and rather dark in color. The stools should be elongated in shape and just firm enough they they will not flatten when dropped.

To prevent constipation, pigs need plenty of water, the amount depending somewhat on the nature of the feed that is fed, since some feeds require more liquid to thoroughly moisten them. The point is that sufficient water be given. In cold weather, the chill should be taken off the water, as otherwise they may not take enough water, or if they do, they may become chilled and that in itself could cause constipation.

Constipation, if not too far advanced, can be readily overcome by feeding hot mashes including some bran until the condition is corrected. In some instances, it might be advisable to include a small amount of epsom salts once a day for a day or two. Once the condition is cleared up they will usually make quite satisfactory gains.

They should, of course, be kept dry and clean at all times. Wet, dirty quarters are likely to be cold and chilly and can cause stiffness as well as constipation. At any rate, pigs will not make satisfactory gains unless the quarters are kept clean and dry.—Elton Nickel, Gowanshtown.



The rat's last meal

THIS filthy snooper thinks he's smart enough to detect poison. He's not smart enough to suspect Anturat. He can't smell Anturat and he can't taste it. Mix Anturat with some of the feed he's been filching—and that'll be his *last meal*.

Anturat is the new Dr. Hess rat killer, made especially for farm use. Its killing agent is antu. It can be used both as a baiting poison and a tracking poison. (To use as a tracking poison, just sprinkle in rat holes and runs.)

Anturat is less toxic to livestock and poultry than most commonly used rat poisons.

We wish you could see all the letters telling us about the effectiveness of Anturat as a rat killer. Plenty of farmers have put it out in the evening and found dead rats all over the place next morning. Get Anturat—get the 8-oz. farm size from your Dr. Hess dealer and go after those rats. Hess & Clark, Ltd., London, Ontario.

ANTURAT

a Dr. Hess product
that kills rats

ANIMAL HEALTH—the control of internal and external parasites and diseases—is the full-time job of Dr. Hess research.



Saskatchewan announces a Dominion-Provincial Foal Policy, paying a \$20 grant for foals from Belgian, Percheron and Clydesdale purebred mares nominated by June 1, 1948.



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SULMET Sulfamethazine for Farm Animals

SULMET Sulfamethazine, newest of *Lederle's* wonder-working family of sulfa drugs, is now available for treating a wide range of diseases of farm animals.

SULMET Sulfamethazine closely approaches the ideal "all-purpose sulfa drug" for animals. Given once in 24 hours at the recommended dose, it will usually maintain proper blood levels for that period.

SULMET Sulfamethazine is recommended for the treatment of the following conditions in:

Horses—Strangles, many secondary bacterial infections associated with respiratory virus infections, bacillary enteritis, septicemia, and navel ill (joint ill) in foals.
Cattle—Foot rot, metritis, septicemia, bacillary enteritis, secondary invaders in pink eye, and in addition to penicillin in chronic mastitis.

Calves—Coccidiosis, septicemia, and secondary infections in white scours.

Sheep—Pasteurella mastitis (blue bag), shipping pneumonia, coccidiosis, bacillary enteritis, and foot rot.

Swine—Bacillary enteritis (Necro), many

secondary bacterial infections associated with respiratory virus infections, and septicemia.

Dogs and Cats—Secondary bacterial infections associated with virus diseases; and septicemia, bacterial pneumonia, and enteritis.

Poultry—Cecal coccidiosis, and for controlling immediate mortality in acute fowl cholera and pullorum disease of baby chicks.

For maximum efficiency in the use of this product, it is essential to obtain an adequate diagnosis.

PACKAGES

SULMET Sulfamethazine TABLETS *Lederle* 0.5 Gm.

SULMET Sulfamethazine OBLETS* *Lederle* 2.5 Gm. and 15 Gm.

SULMET Sulfamethazine SOLUTION *Lederle* 12½%

SULMET Sulfamethazine POWDER *Lederle*

SULMET Sulfamethazine EMULSION *Lederle* 5%

SULMET Sodium Sulfamethazine INJECTABLE SOLUTION *Lederle* 25%†.

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No other tractor in the world can offer you so much in easy implement control, safety, and low-cost operation—a statement any Ferguson Dealer will be glad to prove by a demonstration on your own farm, at your own work!

So easy to use! The original built-in system of

hydraulic implement control, *both* Finger Tip and automatic, with 3-point, one-minute attachment of Ferguson unit implements. Automotive-type steering. Front wheel tread adjustable without the bother of adjusting steering linkage to maintain wheel alignment.

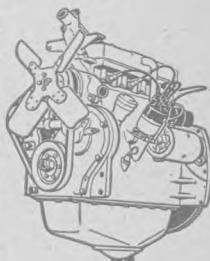
So safe! The *only* tractor with completely automatic hydraulic overload protection—protects operator, tractor and implement if unit implement hits a hidden obstruction. Keeps tractor's front end down. Four-wheel stability. Individual turning brakes, *plus* a single pedal that brakes *both* rear wheels to stop the tractor without side pull.

So economical! Still lower fuel consumption with

new valve-in-head engine, *plus* the automatic action of the Ferguson System in providing traction without excessive built-in weight. Try it . . . test it . . . you'll be amazed at the operating economy of the new Ferguson Tractor! Ask your Ferguson Dealer for a demonstration.

POWERFUL FUEL-MISER VALVE-IN-HEAD ENGINE

New, special-design Continental valve-in-head engine combined with action of the Ferguson System, gives you more work from a gallon of fuel than you would believe possible. High-torque design to give you amazing lugging power at low engine speeds. An engine built to "take it".



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FERGUSON TRACTOR

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AND FERGUSON SYSTEM
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MEAT AND THE WORLD'S FOOD

Continued from page 10

increase is expected to be quite gradual. Actually, the United Kingdom last year imported about nine-tenths of all world imports of meat. In prewar years, these imports came from a wide range of countries including all of those that have been mentioned, either in Europe or elsewhere throughout the world. Meat-consuming countries last year had somewhat more meat available than in 1946, but still not as much as before the war. In addition, the population of the principal meat-consuming countries has increased by about six per cent, which tends to create demand.

ONE reason for additional supplies of meat last year was that more animals were slaughtered. There was a drought in Europe last summer, and in many parts of the world there was a generally short feed situation. These facts, coupled with a substantially higher consumption of meat in Canada, Argentina, the United States and Europe, tended to keep the demand high.

To eke out limited supplies, countries such as Canada, Denmark, Australia and New Zealand, Argentina, Brazil and perhaps some other countries, have imposed certain restrictions in order to conserve meat supplies for export and domestic use. There is still some form of consumer control, such as rationing, or meatless days in many of the importing countries. Nevertheless, and partly as the result of increased population, the per capita meat consumption in practically all countries except Denmark, Eire and Czechoslovakia, was below that of prewar years. In 1947, per capita meat consumption increased in the United States, Canada, Mexico and South Africa over prewar years, and New Zealand, Australia and Argentina still have the highest per capita consumption of meat of all countries. The lowest per capita consumption occurs in such countries as Portugal, Italy, Bulgaria, Brazil and Greece.

Meat being a relatively high-priced food, average consumption in exporting countries will continue to remain high as long as the supply is plentiful at prices which are relatively low. Any substantial increase in the retail price of meat, however, would undoubtedly

cut down consumption per person.

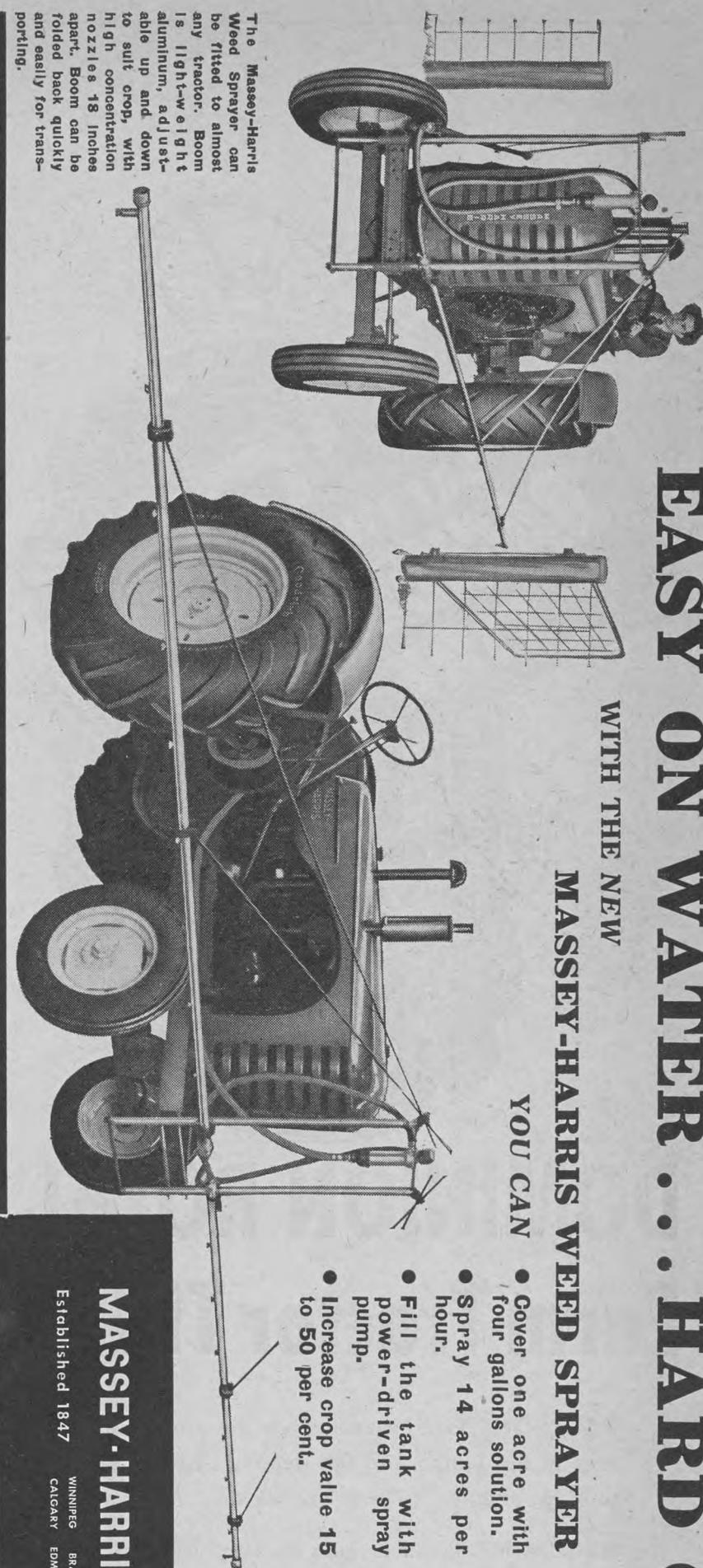
THE general world meat situation and prospects for consumer demand are summarized in the following short paragraphs reproduced from the April issue of "Foreign Agriculture," published by the United States Department of Agriculture:

"In view of the present and prospective feed situation, the sizable reduction in livestock numbers last year, and the present tendency of exporting countries to increase domestic consumption, the general belief is that in the immediate future meat-import requirements or needs of the world will exceed the probable supplies. In Argentina, for instance, the population is believed to have increased substantially since prewar years. This increase, coupled with a high purchasing power, has resulted in an unusually large consumer demand for meat during the past year. This situation has resulted not only in a greater demand for beef, but also for a better quality of beef. Consequently, the higher domestic price has attracted steers of export quality. If this demand continues, possibly Argentina's exportable surplus will be affected."

"Brazil, in all probability, would have no exportable surplus if adequate storage, refrigeration, and transportation facilities were available in that country. Smaller supplies are in prospect in the United States; and the continuation of high consumer demand will surely preclude any sizable exports for several years. The Canadian exportable surplus is smaller, and consumer demand is greater. Situations of increased domestic demands and limited supplies prevail in other countries."

"From the viewpoint of international trade and consumption of meat in the immediate future, particularly in the light of prospective supplies, it appears evident that the trend in trade and per capita consumption, for most of the meat-consuming countries of the world, will be downward for the next few years. Lower indigenous supplies and smaller imports are anticipated. Consequently, the volume of meat entering international trade in the immediate future is likely to be below that of 1946 and 1947. The United States, normally a large producer, is not expected to be in a position to export meat for several years; and in some other countries basic resources, such as livestock numbers and feed supplies, will not be sufficient to warrant exportation for some time. The exports from most of the producing countries are likely to be affected by the strong domestic demand within those countries."

The Massey-Harris Weed Sprayer can be fitted to almost any tractor. Boom is light-weight aluminum, adjustable up and down to suit crop, with high concentration nozzles 18 inches apart. Boom can be folded back quickly and easily for transporting.



MASSEY-HARRIS WEED SPRAYER

YOU CAN

- Cover one acre with four gallons solution.
- Spray 14 acres per hour.
- Fill the tank with power-driven spray pump.
- Increase crop value 15 to 50 per cent.

HERE'S the latest in time-saving, easily handled equipment for economical spraying of agricultural Weed-No-More on your crops. It's the new Massey-Harris Weed Sprayer—specially designed to give quick, accurate coverage. With the 30-ft. size, one man can spray up to 14 acres per hour, and cover an acre thoroughly with only four gallons of solution.

Here are some of the features that make the Massey-Harris Sprayer exceptional value for the money—pressure gauge in full view of operator indicates pressure at the boom—large capacity pump enables quick re-filling of tank—quick action shut-off for stopping spray—all parts contacted by spray solution are rust resistant—large, specially designed filter, traps sediment, preventing nozzle plugging—simple control lever convenient to operator.

With a good quality weed chemical applied at the right time, crop values have been increased 15 to 50 per cent. It pays to spray. For best results and crop protection use a Massey-Harris Sprayer. See your local Massey-Harris dealer for full particulars.

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Triplet calves on the farm of Grant Worth, Nicomen Island, B.C.

Two of these calves were born about 11:00 p.m. on March 19. Mr. Worth and his two farm hands who had assisted then retired, thinking the whole case had been well handled. When he went out to the barn at five the next morning, the third calf, a heifer, was with her mother and brothers in the box stall.

EASY ON WATER . . . HARD ON WEEDS!

FIELD



DOMINION ROYAL Farm Tractor TIRES

***BACKBONE** Tread is exclusively designed to dig lugs in full length and full depth . . . for surer, full-bite traction. *There are no lazy lugs.*

***BACKBONE** Tread is built to keep its grip in wet soil! No mud or dirt traps. Rolling, flexing tire throws off loose dirt and mud.

***BACKBONE** beats costly road wear. Smooth-rolling center rib guards against destructive lug-bending and scuffing.

Before you buy any farm tractor tire see your Dominion Royal Tire Dealer.

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[Guide photo.
This large dugout, 260' x 44' x 10' supplies water from a very small run-off area, for C. R. Jones, Netherhill, Sask.]

Available Moisture Supplies

Testing for spring moisture supply is simple, with an auger or shovel

WITH a considerable amount of moisture stored in the soil last fall, and with the amount of snow that has covered the ground in most areas during the winter, the prospects are that spring moisture supplies are favorable in most areas for at least an average crop. Actual yields, of course, depend also on the amount of rainfall during the important months of May, June and July.

Of the southern Alberta area, authorities at the Lethbridge Experimental Station have found, after many years of observation and soil moisture determination, that if the soil is moist to a depth of more than three feet in the spring, chances are excellent of getting better-than-average crops. For example, annual tests of spring moisture conditions on a wheat-fallow rotation bring out the fact that generally speaking, the wheat has been sown in soil that is moist to a depth of four feet or more. The yield of wheat in this rotation has been over 20 bushels per acre 75 per cent of the time, and in only four of the past 36 years has the yield been less than 15 bushels per acre. In a wheat-wheat-fallow rotation at Lethbridge, the soil was moist to a depth of less than two feet in only two out of 10 years. Twice it was moist to a depth of four feet or more. Yields from wheat on stubble in this rotation have averaged 16.1 bushels per acre over a 24-year

period, and more than 10 bushels per acre has been secured in 17 of the 24 years.

It is quite simple to find the depth of moisture in the soil by using either a posthole auger or a shovel. By marking the shovel handle for various depths and digging down at various representative places in the field until dry soil is reached, it is simple to get a fairly accurate idea of representative moisture conditions.

If moisture is found to a depth of only one foot or less, the chances aren't very good of securing a paying crop, unless of course, the seasonal rain is plentiful and comes along at the right time. If the moisture is down two feet or more, chances are very good of harvesting what might be called an economical crop.

Reports from the Dominion Experimental Farm at Indian Head indicate that with normal rainfall during the months of May, June, and July, average yields can be expected from both fallow and stubble crops this year in districts where the spring moisture supply may be reasonably good. Tests made last fall show that in the southeastern part of Saskatchewan, available moisture is quite good on summerfallow fields; but near the central part of the province, the soil moisture reserve in the stubble fields was not nearly as satisfactory.

Radioactive Phosphorus Tests Fertilizer Use

Science once again promises help to agriculture as a by-product of atomic research

ABOUT a year ago, Dr. J. W. T. Spinks and S. A. Barber of the University of Saskatchewan reported a field test of the use of radioactive phosphorus in studying the uptake of phosphorus on 17 tiny field plots of wheat south of Saskatoon. The study was made in order to find out whether radioactive substances could be used to indicate accurately and clearly at what times and in what amounts fertilizer materials were taken up by plants either from commercial fertilizers, or from the soil itself.

The first small experiment indicated that the use of these radioactive substances could be useful in a number of ways, and a further experiment has now been reported by Dr. Spinks and his associates.

Radioactivity is a natural phenomenon associated with a special class of elements such as uranium, thorium, radium and actinium. These substances are able to throw off radiations of a special character, which are able to penetrate through matter which ordinary light cannot enter. Though the

beginning of this development is more than 50 years old, the intensive study of atomic energy during and since the war has led to a tremendous increase in our knowledge of the atom and its component parts.

Radioactivity develops when the atoms of these heavy elements explode and disintegrate. It has been known since 1900 that some compounds continuously emit a radioactive emanation which, when trapped, produces a marked photographic or phosphorescent action. This activity, however, disappears at a rate based on a definite geometric progression varying with each element. In the case of actinium the period of emanation lasts only 3.7 seconds, whereas the radium emanation lasts 3.8 days. Messrs. Spinks and Barber used radioactive phosphorus which has a half-life, or period of emanation of 14.3 days.

It is possible to convert this radioactive phosphorus to phosphate and mix it with an inactive phosphate fertilizer. It possesses the same chemical properties as the phosphate fertilizer so

that, while retaining its own radioactive properties, it follows the path of the inactive phosphorus in all reactions. Consequently, the movement into and up the plant, of the fertilizer phosphorus, can be followed by the course of the radioactivity of the active phosphorus.

In the past it has been customary to measure the amount of phosphate fertilizer actually reaching the plant by comparing the amount of phosphorus in fertilized and in unfertilized crops. The extra phosphorus shown in the fertilized crops over that shown in an unfertilized crop has been assumed to have come from the fertilizer.

At the famous Rothamstead Experiment Station in England, it was found that a first crop fertilized at the rate of 70 pounds of phosphorus fertilizer per acre recovered from 8 to 25 per cent of the fertilizer in the crop. When radio phosphorus was used, however, it was shown that the phosphorus in the fertilizer is used in the wheat plant early in the growing season, and that very little phosphorus from the fertilizer is used after the plants begin to head out. The same experiments also show that since the addition of phosphorus fertilizer stimulates plant growth, this increased growth will also use more phosphorus from the soil than is used by a crop that has not been fertilized. It is possible also to use a radioactive tracer such as radio phosphorus, to see exactly what happens. As the result of such use, the experimenters at Saskatoon found: 1, that there is very little, if any, difference in the amount of soil phosphorus taken up by the fertilized and unfertilized wheat in the first four weeks of growth; 2, that when the plants are from four to six weeks of age, the fertilized wheat took up 14 per cent more phosphorus from the soil than did the unfertilized wheat; and 3, that plants from six to eight weeks of age took up 43 per cent more phosphorus from the soil than unfertilized wheat. In other words, practically all of the phosphorus taken up by plants that had been fertilized comes from the fertilizer in the early stages of growth, but that later much of the phosphorus used by the plant comes from the soil itself, even if a phosphatic fertilizer has been applied.

Plain Talk about Weeds and Moisture

HERE are a couple of pithy paragraphs which say more than many an hour-long speech. They come from P. J. Janzen of the Swift Current Experimental Station, and refer particularly to southwestern Saskatchewan, but are applicable over a much wider area.

"Fall precipitation is frequently lost entirely due to weed growth in the stubble after harvest. Winter precipitation may be lost due to delay in starting fallow operations. Summer moisture may be lost by allowing volunteer grain and weeds to grow on the fallow during the fall. It is quite apparent, therefore, that in order to conserve the greatest possible amount of moisture, it is absolutely essential that the land be kept free of weeds from the time one crop is harvested until the next crop is seeded. To accomplish this objective may necessitate anywhere from one to three more operations than are being undertaken in most cases at the present time. Such additional operations can be done at a cost of less than 50 cents per acre per operation. The records show that such additional work will increase the average yield by at least six bushels per acre. It would appear to be a very sound investment, even when the price of grain is considerably lower than at present."

"It appears to be a general opinion that the extra tillage required to conserve moisture will lead to excessive soil

drifting. Experience has shown that this is not necessarily the case. The problem of soil drifting control does not depend so much on the number of operations, as it does on the kind and quality of the work done and the condition of the land at the time of doing the work."

Disc Blades and Cultivator Shovels

Maintaining a highly polished working surface is generally all that is required to recondition the blades of disc implements. If the blades are highly polished, machine adjustments will usually secure the proper penetration.

All badly worn, cracked or broken discs should be replaced with discs of the same diameter and concavity as the remaining discs. If diameter or concavity is different on a new blade from the remaining discs, it will be difficult to maintain a uniform working depth and to avoid excessive ridging.

A polished surface free of paint, rust and dirt, and protected during periods of idleness by a rust preventive, will facilitate scouring.

If sharpening discs is necessary, it should be done with extreme care. Cold rolling is frequently used, but in this case care must be taken to maintain the original concavity of the disc. The process often changes the curvature or concavity near the outer edge, which may result in excessive tipping and weakening of the discs. Grinding discs is wasteful of material and reduces the thickness of the cutting edge. This results in decreasing the diameter of the disc and in losing the tempered portion.

All of the remaining part of a cultivator is constructed so that the shovels can do good work. They should, therefore, be in first class working order during use, and this means complete weed cutting at a shallow depth.

The Dominion Experimental Station at Swift Current considers it essential that the cultivator shovel have sufficient suction to permit penetration. The worn and rounded wing tips should be drawn out straight and the cutting edges sharp. Like the disc blades, cultivator shovels should operate with a good polish and it is recommended that they be coated with oil when standing overnight, as well as covered with a rust preventive when stored in off-seasons.

Shovels with a thick rounded edge will not shear properly and weeds slip by worn and rounded wing tips. Roots hang more easily also on the edges of a dull cultivator shovel, thus tending to push the shovel out of the ground. It may be added that deep cultivation with dull shovels adds greatly to the amount of power required and produces a poor job of weed killing.

Alfalfa Talk

SOME time ago we received the following from a Guide reader in Manitoba who has had considerable experience with alfalfa. Confined pretty much to the house and surroundings because of the amount of snow piled up thereabouts, he consulted the Muse and produced the following result in the form of a letter. Here it is:

"If you are one of those who yearn to turn from stock to straight lucerne, and feel the urge to make some dough with very little sweat of brow, and think there's nothing you will need except a little ground and seed, it might be wise for you to stop and consider the hazards of the crop. This is particularly true, I feel like pointing out to you, who think alfalfa grown for seed is bound to fill your every need. My own experience has shown this is the trickiest crop that's grown. You think, of course, I'm feeling blue, or trying to discourage you. No, no, my friend, it's you must choose, but pray think of what you may lose. I mentioned hazards, here's a few to spoil

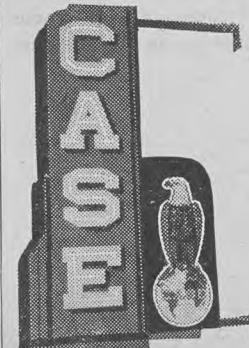
Yield Per Man Goes Up...



Cost Per Acre Comes Down

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TWO Western Canadian NATIONAL BARLEY CONTESTS for 1948

2 BIG CASH PRIZE LISTS

ONE for FARMERS

For entries of
carload of com-
mercial grain
from farmers in
Western Cana-
da's Malting
Barley Areas.

FARMER'S COMPETITION

9 REGIONAL CONTESTS
3 regions in each province—
Manitoba, Saskatchewan,
and Alberta (including Peace
River Block).

First Prize \$100
Second, \$80; Third, \$70
Fourth, \$60; Fifth, \$50

3 PROVINCIAL
CONTESTS

First Prize \$400
Second, \$300; Third, \$200

INTERPROVINCIAL
CONTEST

First Prize \$1000
Second, \$500

ONE for SEED GROWERS

For entries of
500 bushels of
Registered or
Certified Seed
from seed grow-
ers in Western
Canada's Malt-
ing Barley Areas

SEED GROWER'S COMPETITION

PRIZE LIST

3 PROVINCIAL CONTESTS

First Prize \$275

Second, \$175; Third, \$125
Fourth, \$100

INTERPROVINCIAL CONTEST

First Prize \$1000
Second, \$500

All farmers and seed growers in malting barley areas are eligible.
Only one entry from each farm unit.

PLAN NOW TO WIN A PRIZE FOR YOUR 1948 BARLEY

For full details and entry form contact your

- Agricultural Representative,
- Elevator Operator, or
- Provincial Crops Commissioner

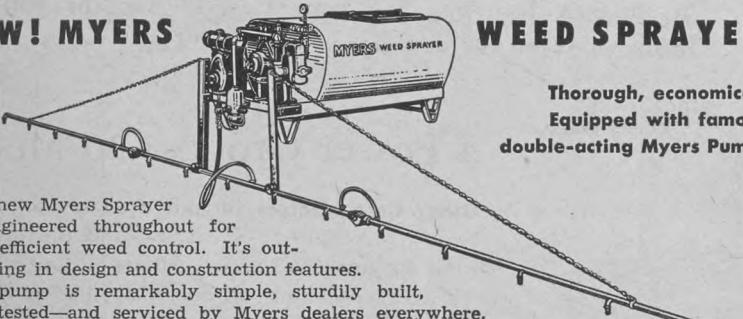


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the best stand ever grew: There's drought and hoppers, wind and frost, stinkweed, sweet clover, hail and rust; the crop is short, or much too long, it flops around and lies all wrong. Nor are these all that you must know; the early crops avoid the snow. It may, of course these dangers flout and many flowers blossom out. Should this be true, don't start to gloat. Smoke tailor-mades or buy a goat: There's many a slip twixt cup and lip, the doggone stuff may fail to trip. On any fault your hopes may wreck, bacterial wilts its growth may check.

"On the other hand, if all goes right, with nary a bug nor blight in sight, and the curlyques fill as they ought to do, lots of neighbors will envy you. They'll tip their hats to all your wealth, and if you pay, they'll drink your health. If you listen you can hear them swear they'll have alfalfa sure next year. They don't know how your heart has sagged, before that seed was in the bag, or the miles you tramped around the field, rubbing pods and figuring yields, wondering whether to leave for seed, or put the business up for feed: If seed, should you tie with binder twine, mow it, or use a straight combine? If you've never tried it you wouldn't dream it's not as simple as it might seem.

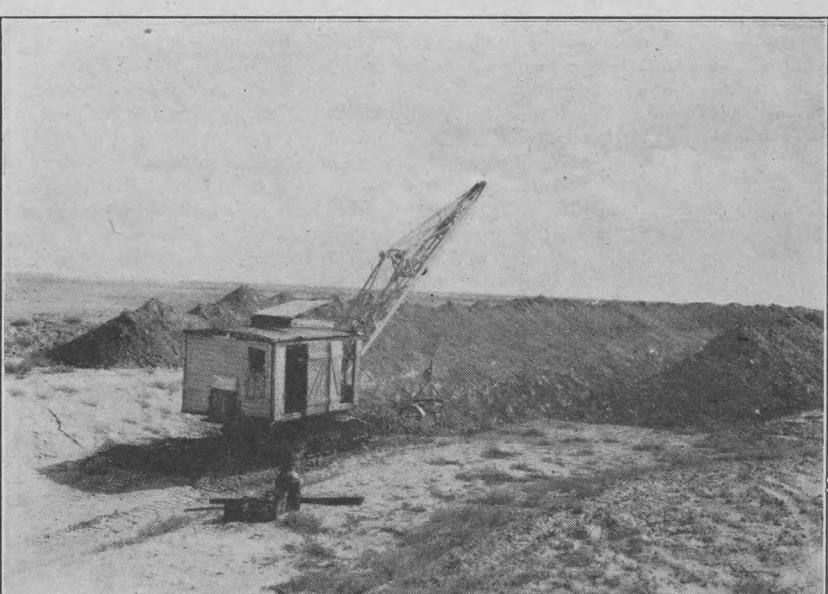
"My advice, in case you ask it: Don't put your eggs in just one basket. Raise some chickens and wheat and oats, milk a few cows and feed some shoats. If you're not afraid of the income tax, try a few acres of Redwing flax. Alfalfa belongs right with the rest, and on some farms it may be best, but I am sure you'll find, my friend, that mixed farming pays in the end."

due largely to the demands from Canadian milling companies for a low-protein flour to be used for pastry purposes. This increased price no doubt accounts to a considerable extent for the special interest in this crop during recent years.

One of the reasons why winter wheat was grown is that the crop ripens about two weeks earlier than spring wheat, and lengthens the harvest season to that extent. Coming along early, it is less likely to suffer loss from hail, shattering, and bad weather conditions, owing to the pressure of work which sometimes leads to the delayed harvesting of spring wheat. The crop also has the advantage of relieving the rush of spring work. True, seeding must be done during the busy harvest season, but this is not considered as much of a disadvantage as might seem to be the case by those who have had experience, since the work can be done rapidly. In the irrigated areas some farmers have used winter wheat for the control of the Canada thistle, growing two crops of winter wheat in succession and plowing deep before each crop and again after the second crop. This method is reported by the Dominion Experimental Station at Lethbridge to be effective. Also, in the areas subject to severe soil drifting during the winter months, winter wheat has been of advantage since it offers a cover for the soil during periods when the land would otherwise be bare and drift badly. Consequently, the usefulness of winter wheat in this connection depends on the amount of growth secured before winter sets in, which is again related to the earliness of seeding and the favorable weather which may follow.

Thirty years ago the growing of winter wheat received a serious setback owing to injury from root rot. As a result, seeding after September 1 was recommended, and has been practised for the most part since that time. However, the development of serious soil drifting now suggests that in order to get a good covering as protection for the soil during winter, seeding should be advanced to the middle of August. Crops sown late in September make very light growth in some seasons. Thorough tests are now under way, and it may be that the earlier date can safely be recommended for southern Alberta.

Winter killing of the crop sometimes occurs, as in the winter of 1946-1947, when almost half of the fields needed reseeding. Nevertheless, at the Lethbridge Station, winter wheat in the dry land rotation plots has killed out completely only twice in 35 years. Persons interested in further details of this crop may obtain a new bulletin "Winter Wheat Varieties and Their Production in Alberta" from any experimental farm or station, or any local department of agriculture office.



[Guide photo.
This drag-line is extending a main canal in the Eastern Irrigation District, Alberta.]

250,000 ACRES OF CANADIAN GRAIN FIELDS PROVE THAT



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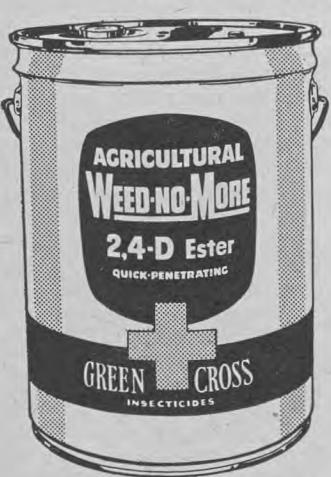
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This practical experience on a commercial basis established proof of the outstanding superiority of the butyl ester of 2, 4-D, as developed and pioneered by Green Cross in Agricultural Weed-No-More.

Applied early, at the time and dosages recommended, Green Cross Weed-No-More kills weeds before they get established, thus preventing them from shading or choking out the young grain or draining moisture and nourishment from the soil. It penetrates so fast that rainfall, even within a few minutes after application, can not wash it off or weaken its killing power.



It is estimated that the use of 2,4-D on a limited acreage will increase the Canadian 1948 grain yield by over 20-million bushels. Today, when food production is so vital, take full advantage of this knowledge to increase YOUR crop through modern weed control.

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 SALT DIVISION

BACK PAY FOR WHEAT PRODUCERS

Continued from page 12

half had been received, so that until the remainder are sent in, payment on them must be withheld. By the time this article is read, the Board will also have called in all certificates covering the 1947 crop issued prior to April 1.

Many producers seem to be quite careless about sending in their producer's certificates. For example, final payments have been made on the crops of 1943 and 1944, but the Board is still holding nearly \$10 million for producers who delivered nearly 60 million bushels of wheat during these two years. Also, there are about 2,000 prairie farmers who could collect more than \$2 million on 1945 wheat marketed between April 1 and June 30. This was an income tax arrangement by which an emergency wheat receipt was issued equivalent to the \$1.25 initial price of the 1945 crop. It was a sale, with cash settlement deferred, on the understanding that producers must take payment by December 31, 1948. Consequently, these emergency wheat receipts must be surrendered before December 31 of this year to be valid.

WHEN the producer's certificates are delivered by the post office to the Wheat Board office, the envelopes in which they arrive are sorted by elevator points and filed away in boxes in alphabetical order. As they are needed, all of the envelopes for any one station are taken to what is known as the assembly room. Here they are opened and all of the requisition forms and attached certificates are arranged alphabetically by the name of the grower.

From the assembly room the requisitions and attached certificates move on for checking. There are seven checking sections, each one taking care of a certain section of the alphabet.

Suppose the requisitions and certificates from Rosetown, Saskatchewan, go to checking section No. 6. Here each requisition is checked with the original and the duplicate certificates, not only as to delivery point, but as to producer's name, grade and the bushelage involved. Errors are sometimes found, and in such cases that producer's requisition and file is set aside for further checking and perhaps correspondence.

When the checking has been satisfactorily completed and the producer's certificates found to compare properly with the original, the requisition is then turned over to the comptometer room. Comptometers are useful calculating machines which are able to add, subtract, multiply and divide. The experienced operators of these machines total the bushels listed on each requisition and separately total the certificates attached to the requisition. Then, the total of all the requisitions at each elevator point is entered on what is called a station control sheet, after which the requisitions and control sheets go forward to still another department called the tabulating department, where the cheques are ultimately made out in the names of the individual producers to whom payments should go.

Thus far in the process the object has been to see that each producer will receive full payment for his certificates, and also that there is no duplication of payment. The Board must send out exactly the required amount of money, and also see that each producer receives exactly the amount to which he is entitled.

UP to this point in the handling of Wheat Board payments, about the only machine used has been the comptometer, because most of the work involved has been opening envelopes and sorting and checking their contents. From here on, however, the machines

really come into their own. When it was known some months ago that as soon as Parliament approved of the payment, a tremendous volume of cheques must be issued within a short period of time, the entire system of issuing cheques was overhauled and an effort made to devise the most efficient system possible. Waste motions and duplicated effort were eliminated as far as this could be done, and every effort was made to secure a machine for each operation that a machine could perform. In other words, streamlining the issuing of Wheat Board cheques was undertaken in a big way.

IN all, 15 different types of machines are necessary to efficiently produce payment cheques for the wheat growers of western Canada. Machines, however, are not human. They will do what they are supposed to do, but nothing more. This presented a problem of organization, because while one machine might turn out 5,000 operations per hour, another might do only 5,000 operations per day. What was wanted was the largest possible number of completed cheques per day, so the problem was to get exactly the right number of machines of each type to keep a steady stream of cheques ready for mailing, with no machines idle if possible. Actually, the wheat payment department is able to turn out 15,000 or more cheques per day.

In this machine or tabulating room, they do not merely write out a cheque for John Smith at a specified address and mail it. For each requisition form a card is punched with small holes by a special machine. Each hole, according to its position on the card, indicates a specific figure or character. When completed, each card has been punched so as to contain the producer's name, his address, his shipping point and the total number of bushels delivered. After punching, these cards are checked for accuracy, and then fed through what is known as a multiplying punch. When the cards pass through this machine, wire brushes detect the presence of the holes and, for example, read off the number of bushels, after which the machine multiplies this number by the rate of payment, and then punches the value into the card at the rate of about 1,000 extensions per hour.

CARDS of two different colors are used for all the grain of a single elevator point, and for producer totals at the same point. These two must agree in order to prove the accuracy of the operation so far.

If they do agree, the producer's card is then sent on to the cheque-writing tabulating machine. This is a marvelous invention. It is not very big, but it weighs over a ton, has 50,000 separate parts varying in weight from a fraction of an ounce to 100 pounds, and contains 75 miles of wire, which, when exposed, makes its interior look like a small telephone exchange. It will add or subtract 150 cards per minute, and list 80 items per minute. The cheque forms are fed through the printing unit of this machine in long, perforated strips, and it will write about 1,500 cheques per hour.

Cheques must also be signed, but since no one could sign 15,000 cheques

per day, a special machine has been designed for this purpose. The cheque signer is really a little rotary printing press, which prints two signatures, the date, and other information if needed. Another little machine which works at 12,000 per hour, separates the individual cheques from the long, perforated strip which goes through the cheque-writing machine.

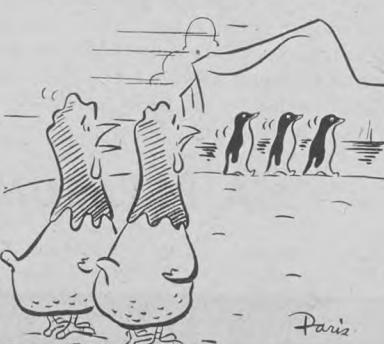
Finally, when the cheque writing and signing is completed, the value of all the cheques that have been machine-written is added up on hand-operated, electric adding machines, and these are checked against the control figures by elevator points. If the two figures agree, the cheques are then inserted into window envelopes and mailed. There is a machine made which will stuff envelopes, but it was impossible to secure one at the present time. Some of the hand work of mailing was eliminated by using postal metering equipment which puts on the right amount of postage and seals the envelope at the rate of 7,000 per hour.

EVEN when the cheques are in the mails, the job is not completed. When producers have received their cheques and have cashed them at the bank, the cheques themselves ultimately come back to the Wheat Board office. There they must be rigidly accounted for in order to keep an accurate record of cheques that are still outstanding. Occasionally, too, cheques will be lost, and the Wheat Board cannot simply issue another cheque on request, just because little Johnny lost the letter on his way home from school, or Dad carried it carelessly in his hip pocket and pulled it out with his handkerchief. The Board must know that the cheque has really been lost and that Richard Smith, who has asked for a new cheque, really has one coming to him.

Two hundred and forty thousand farmers can keep quite a few Wheat Board clerks busy checking up on their mistakes. Producer's certificates sometimes get lost, and the same man may send in certificates made out in the name of several different people. For example, Richard Smith may operate a farm on which his son, Jim Smith, and his uncle, Tom Jones, are working. Each may haul grain to the elevator, and certificates may turn up in the Wheat Board office made out to each of them, but all sent in on Richard's Smith's requisition form. These irregular occurrences inevitably find their way to the desk of the manager of the wheat payments department, who has to check them up. It is really surprising how many different kinds of errors and mistakes will crop up in the handling of a single crop of grain. Wheat Board officials, however, accept them philosophically and do their very best to straighten everything out.

It may surprise some of our readers who may think that city folk who work in offices have a pretty soft life, to know that when the wheels began to turn on March 25 for the payment on the 1945 crop, the daily issue of cheques was increased from 6,000 to 15,000 per day, only because a number of the Wheat Board payment department staff worked through Thursday evening, Good Friday, all day Saturday, and Easter Sunday. Moreover, in order to get out the cheques in the time which has been scheduled for them, some of the machines will have to be operated continuously for at least 10 hours per day, which means a great deal of overtime for some of the staff.

The payment for the 1945 crop was completed on April 17 and involved 235,480 cheques totalling \$43,034,007.86. It is expected that mailing will be completed for the 1946 crop about the first of June. No one knows when the payment for the 1947 crop delivered up to March 31 will be completed, but it is hoped that it may be accomplished sometime in August.



"We might as well admit we're lost!"

The Cost of Beef Production

With costs up 41 per cent, labor scarce and a long critical winter, western ranchers will not record much profit for 1947-48

DURING the sittings of the special parliamentary committee on prices at Ottawa, a brief was presented on the cost of beef production in western Canada, by H. J. Hargrave, Assistant Superintendent, Dominion Experimental Station, Swift Current, Saskatchewan, and formerly in charge of the Dominion Range Experimental Station, Manyberries, Alberta. Mr. Hargrave's brief dealt with beef production on western ranches, and he reported an over-all increase in cost amounting to 141.3 per cent as between the 1938-1941 period and the present time. He based his 1938-1941 figures on a survey of 218 ranches for three consecutive years made by the Economics Division and the Experimental Farms Service of the Dominion Department of Agriculture.

Cash operating expenses per ranch then averaged \$3,280 per year. Mr. Hargrave estimated it now as \$7,914 per year, representing an increase from \$8.93 to \$31.54 in cash operating expense per head carried and from \$31.54 to \$76.11 in cash operating expense per head marketed.

Labor, he reported, costs from \$80 to \$100 per month with board, as compared with \$20 to \$30 per month with board in 1938. Rentals on grazing leases, taxation, and grazing rates per head for forest reserves and community pastures have risen in cost from 150 to 200 per cent. Costs of operation for automobiles and trucks were estimated to have increased by 34.8 per cent. Hay has increased from \$10 to \$20 and \$25 per ton, and in some recent cases to \$65 per ton. Straw has recently cost \$25 per ton, and grain has risen from about one to 2½ cents per pound. Fence posts have increased from 12 or 15 cents to 30 or 40 cents each.

In addition to these increased cash operating costs, there are depreciation and investment expenses. In 1939, the average ranch running 367 head of cattle had a capital investment of about \$35,000. Today the investment in the same ranch would be about \$75,000, which means that interest charges would have increased from \$1,750 to \$3,750 per ranch, with corresponding increases in depreciation on buildings, equipment, fences, machinery, bulls and lease contracts.

FOR comparison with 1939 figures, Mr. Hargrave provided actual cash operating expenses for four different ranches, running from 676 to 1,075 head each, including from 210 to 371 breeding cows, and marketing from 153 to 440 head per year.

"When the 1948 books for these four ranches are closed, they will no doubt show up the effect of the long critical winter period that is not yet concluded in western Canada (April 20—Ed.). Increased feed costs will be evident, along with reduced inventories as a direct result of stock losses. Calving on the range commenced in early April in the midst of most unfavorable conditions. Owing to storms, snow-covered ranges and exhausted feed supplies, there has already been a heavy loss of new-born calves as well as older stock. These conditions serve to indicate a few of the risks and hazards involved in the ranching industry of western Canada—risks which in past years have forced many ranch operators into bankruptcy."

Mr. Hargrave also gave evidence as to the difficulties of the feeders of cattle in western Canada, reporting the 1947-48 cattle finishing season as one of the most difficult seasons ever experienced. He pointed out that a majority of the feeders in the irrigated districts of Alberta and in the mixed farm-

ing areas of the West had their cattle purchased for winter feeding prior to the removal of ceilings on coarse grains on October 22. "Feed prices," he said, "immediately doubled after this date, with the result that a great many feeders were caught with insufficient feed and forced to purchase at the increased prices, or to dispose of their cattle in an unfinished condition. The situation has been further complicated by the abnormal weather that has prevailed in western Canada since February 1. The demand for feed, especially roughages, has forced prices up to absurd levels."

He gave figures as to the costs of feeding and finishing cattle, from eight actual feeders, whose cattle were fed for varying periods ranging from 105 to 210 days and were brought in at weights varying from 540 to 1,000 pounds. The total gain during the feeding period ranged from 193 to 523 pounds per head, at a cost of from \$40.80 to \$140.22 per head. The cost per pound of gain ranged from 19.9 cents to 31.9 cents per pound, and the profit or loss over feed costs per head varied from the loss of \$28.92 per head to a profit of \$9.16 per head. The margin between the purchase price last fall and the final selling price varied from 1½ to 3½ cents per pound live weight.

"In normal times," said Mr. Hargrave, "when there is a normal relationship between feed prices and livestock prices, the cost of producing 100 pounds of gain on market cattle closely approximates the price per 100 pounds of fat steer. This situation pertained up until the removal of controls on feed last October; steers were selling up to 15 cents per pound and feed costs were just a little under this figure. With the removal of controls, grain prices doubled, but there was no corresponding increase in beef prices. There has been some advance in beef prices since then, but it has not been sufficient to compensate for the rise in grain prices.

"In order to make a normal profit at present feed prices, the majority of feeders in western Canada are of the opinion that they should receive \$18 to \$20 per hundredweight for well finished cattle (cattle on the Winnipeg market reached a peak of \$19.25 per hundredweight on April 28—Ed.). When all finishing costs are considered, experienced feeders estimate that the loss on their operations during the past season will range all the way from \$10 per head to an extreme of \$50 per head for long-fed steers."

The brief offers some conclusions as follows:

"A glance at the history of beef cattle production in western Canada brings out several facts that are pertinent from the standpoint of the present status of the industry. During the period 1929 to 1939, beef producers went through one of the most difficult periods in the history of the industry. Depressed prices, coupled with adverse climatic conditions, resulted in heavy financial losses. At the end of this period the physical and financial assets of the beef producer were almost exhausted. Ranch buildings and equipment were in a very poor state of repair and the average debt was at a record high level.

"Since 1940, conditions have improved very materially. However, during the war years taxation was such that adequate financial reserves could not be built up to repair all of the assets. Scarcity of labor and materials has been of great concern to the beef producer as he has not been able to take full advantage of his improved financial condition."



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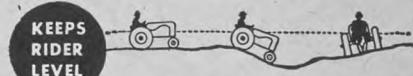
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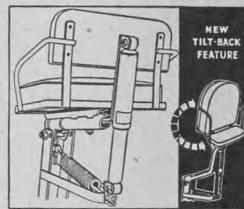
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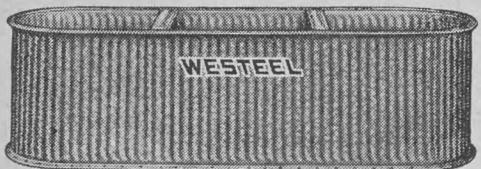
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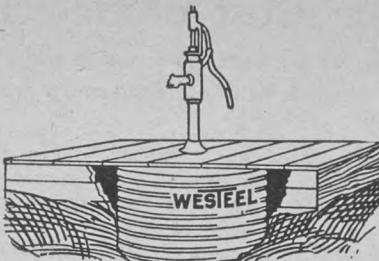
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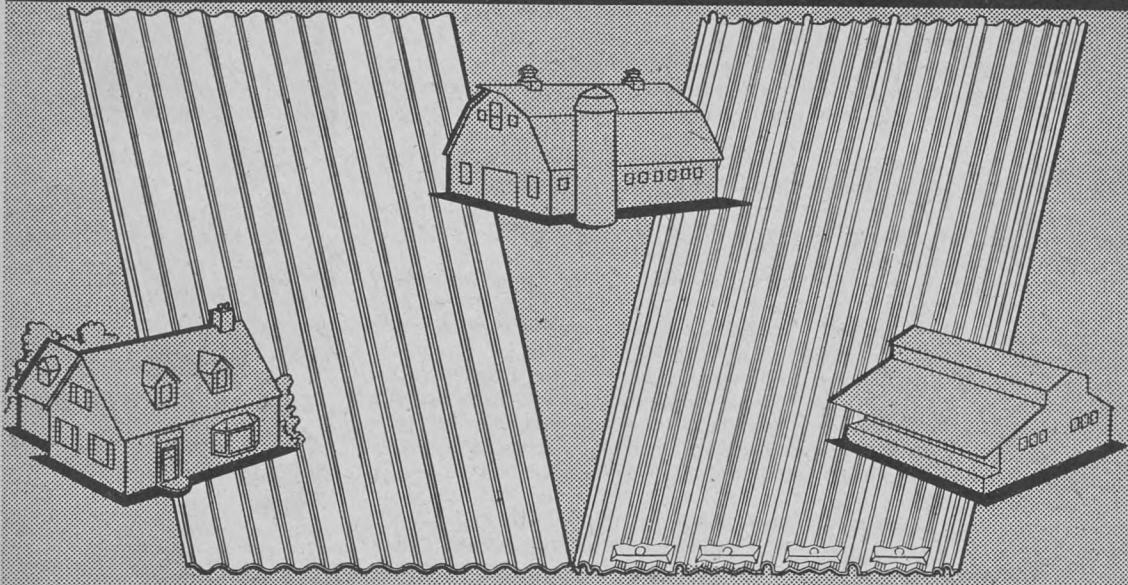
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OTTAWA SHIES

AT OLEO

Continued from page 11

Before the war the dairy farmers of Canada produced 15 billion pounds of milk annually. They are now producing at the rate of 17 billion pounds a year under a controlled price which severely limits profits. Recovery abroad, and the operation of supply-and-demand forces at home would restore the balanced dairy production this country enjoyed before the war, in which margarine had no place, and the urban dweller would have butter aplenty.

From the dairy farmer's viewpoint it looks like this: The temporary butter shortage occurred through no fault of his. It occurred in spite of his meagrely rewarded effort to head it off. It is the result of government interference with the normal course of his business. During the war, he, like other producers accepted regulation for the common good. He is still patient under control while urban Canadians are free to exploit profitable postwar markets. It would be queer justice in the face of this record to sanction now the importation of a competing product which might ruin his future.

TO meet the butter shortage by the temporary legalization of oleo involves another consideration. There is an acute world wide shortage of edible fats and oils which will last until 1951. Canada is one of 13 importing countries whose allocation of oils and fats is regulated by a committee of the international emergency food council. Currently the Dominion is allowed 80,000 tons a year, of which about half is for soap and the balance goes into shortening and similar products. In view of the tragic need abroad Canada is not entitled to, and probably could not obtain, an increase in her quota. If margarine production were allowed in Canada it would have to come out of the small supply allocated for the manufacture of cooking fats. What we gained on the oranges we would lose on the bananas. The temporary butter shortage is teaching us that we have become willy-nilly part of a world economy.

Clearly a temporary expedient is out. Let us look at the implications of a permanent sanction for oleo as the parliamentarians saw it.

Published right under their noses by the Ottawa Farm Journal is a table of figures the members must have seen, giving the per capita consumption of the principal fats in Canada and the U.S. While no date is given one must assume the figures are at least two years old.

	United States	Canada
	Lbs.	Lbs.
Butter	10.5	28.6
Margarine	4.2	—
Lard	11.9	4.7
Shortening	9.9	7.9
Other fats	6.2	1.4
Total fats	42.7	42.6

It indicates first of all that at the level of economic development reached in these countries, 40 pounds of fat seems to be a normal requirement for maintaining health. If it is not obtained through one channel it will be reached through others.

Some people will say that if the substitute only cuts into the genuine article to such a small degree, why all the fuss?

Gilbert McMillan, who supplies the figures, also provides an answer to the question. Suppose Canadians took to margarine at the rate it is consumed in the U.S. It would displace about 50 million pounds of butter. That would

be sufficient to place Canada on an export basis again.

THOSE familiar with the history of the dairy industry in Canada know what this means. In past years, an exportable surplus of even 10 million pounds has depressed the price of butter 20 to 30 per cent, a depression which was immediately reflected on all dairy products.

For the sake of argument let us say that the poorer paid urban worker will take advantage of the opportunity afforded by having the market opened to margarine. The per capita consumption of butter is 28 pounds, which Mr. McMillan values at 60 cents, an average price never attained for as long as a year in Canada. Replace this with margarine at 40 cents. The year's butter ration would cost \$16.80. Replaced with margarine the cost falls to \$11.20, or a difference of \$5.60 per capita. For an average family of five this would amount to \$28.00 a year, or five days' wages for an unskilled laborer.

Now look at the other side of the picture. There are 370,000 dairy farmers in Canada. It is a safe estimate that over 100,000 of them are operating farms that a 20 per cent income reduction would put out of business as an economic unit.

In eastern Canada particularly, many farmers are operating on farms ranging in size from 100 to 200 acres, of which perhaps one-third is arable and the balance pasture and woodlot. A living on such a farm can only be gained through the agency of the dairy cow, and it is a precarious one at that.

Now follow Mr. McMillan's argument through the next step.

Canada is a country where dairying must be conducted under severe climatic handicaps. Its farmers cannot compete unaided with those of Denmark and New Zealand. Put Canadian butter on an export basis and you drive the income of marginal operators below the point where they can continue. They join the trek to the cities to compete for jobs with the worker who by our former calculation has saved \$28.00 a year by the availability of oleo.

The more favored operators will remain in the dairy business at a lowered income. Remember, however, that 17 per cent of Canada's population owes its living to the dairy industry. For seven consecutive years in the '30's Canada's annual milk production brought in more money than her wheat crop. The aggregate reduction in buying power that would ensue if butter went on an export basis would diminish the outlet for a large volume of Canadian made goods. It takes no stretch of the imagination to see that the laborer who might save \$28.00 a year by the availability of margarine, might have his pay check affected much more adversely by the reduction in farm buying power.

ACTUALLY Mr. McMillan's figures are out of date. Oleo has made far heavier inroads on butter in the U.S. than the above table indicates. The experience in that country shows that when prices go up oleo displaces butter at a faster rate. Usually when prices go down, butter gets back some of its lost ground. An American farm broadcast on April 20 announced for the first time in history the volume of oleo production in the U.S. exceeded that of butter! The dairy cow population is rapidly dropping in butter producing states. In Minnesota it has dropped 8.4 per cent; in Iowa 11.1 per cent; 16 per cent in Idaho and 18.6 per cent in Nebraska. Butter is taking a terrible trimming from oleo at the moment.

The spurt in oleo sales owes something to a new system of packaging. As a measure of protection to American farmers, state and federal governments have put a high tax on uncolored margarine, which is about as attractive a spread as domestic shortening to look

at. But the ingenious Yankee manufacturer has discovered how to sidestep the law. His oleo now comes out in a plastic package, containing a capsule of coloring matter, in which the housewife can mix the margarine color without ever taking the spread out of the container. Simple massaging of the package does the trick.

THERE is another aspect of the problem fully appreciated by studious farmers but not clearly understood by townsmen. The history of agriculture in every age and every land confirms the lesson that when the exploitative phase of farming in a new land is over some attention must be paid to soil conservation and renewal. The wit of man has yet to devise a better method than livestock raising. Commercial fertilizers unaided by livestock will not work that miracle. Now that the nutritionists have converted us to less meat and more milk in the human diet, dairying is in a fair way to become the keystone of permanent agriculture. Millions of Canadian acres, west as well as east are already in a state where more rather than fewer cattle should be kept. Lessened butter production is a blow to soil conservation, according to the spokesmen for butter protection.

One of the ablest of these spokesmen is Bryan L. White, editor of the Ottawa Farm Journal. Let us look at some of the arguments from his glowing pages.

War time experience taught Canadians how important bacon and poultry production can be in augmenting farm income. Both of these are associated with dairying. Their greatest development in the early '40's was, and could be again, in those areas where surplus milk can be obtained in abundance—in butter producing areas. As these areas contract, so will Canada's hope of maintaining the egg and bacon markets built up during the war.

Most of Canada's butter is made in small creameries operating on narrow margins of profit. A depressed butter market will close many of them. Some of the more efficient milk producers whose activities could survive a reduction in milk prices would find themselves automatically shut out of a market for the product.

In some localities in the United States where dairymen despair of holding their ground against the encroachments of margarine, they are contemplating letting the butter market go and concentrating on supplying the rising demand for fluid milk. Americans consume a per capita average of 403 pounds of milk a year. The experts calculate that there is a potential market for 657 pounds. Their contemplated policy makes sense. In much of that country populous centres are close together. No farmer is too far away from a large urban centre to share in the fluid milk market.

In western Canada such an alternative doesn't exist for the great majority of milk producers. Long distances and the state of our country roads make the daily collection of fresh milk out of the question. It's butter or nothing.

SENATOR EULER posed an old chestnut for his associates in the upper House. The use of margarine has not ruined dairy farmers in other lands, says he. It has not ruined the farmers of Denmark or the U.S. From which it is to be inferred that it would not do so in Canada.

But Editor White will not let the senator get away with it. Here is the answer he gave this author at Brockville in February:

The honorable senator is guilty of comparing things which are not comparable. Conditions in Denmark are peculiarly favorable to butter production. Denmark can undersell any other country in the world's most crowded market. It is state policy for the maximum quantity of butter to go into export, and in order to enable it to do so there is deliberate state encourage-

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An All-Crop harvester owner reports that his machine saved 44.7 bushels of wheat per acre from a neighbor's field which was hopelessly lodged and written off as a total loss. The All-Crop handled straw six feet long, tangled and flat on the ground.

Dramatic, yes. But just another job for this versatile pioneer of once-over harvesting.

Unusual features explain the All-Crop harvester's ability to cope with extreme conditions. Its close-cutting header literally shaves the ground. The full-width cylinder takes heavy straw and green growth in full stride . . . the oversize straw rack handles big straw volume.

A Quick Speed-Changer crank controls cylinder speed instantly for over 100 different grains, beans and seeds. Weed seeds and dockage are screened out by a Scour-Kleen attachment.

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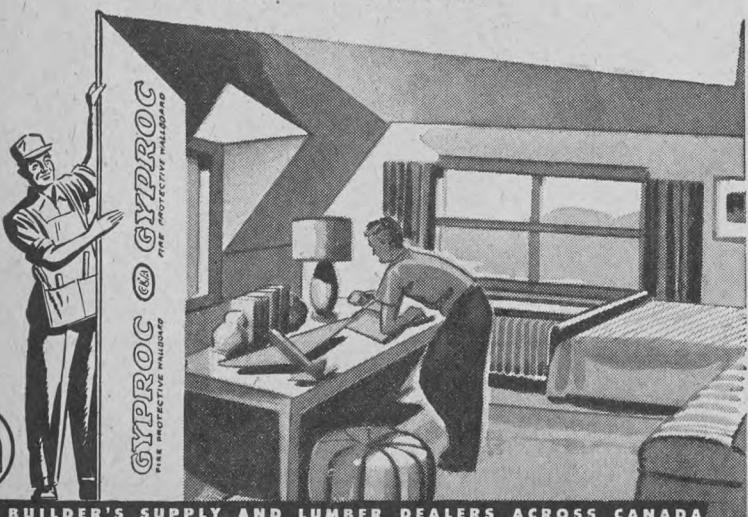
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ment to consume margarine, even on the farms where the butter originates.

In the U.S. another set of circumstances prevails. American agriculture is the world's best source of cottonseed oil, the favorite for oleo. Peanut oil, from the southern states, is a close second. Soybean oil comes further down the scale, but the Americans are now producing it in prodigious quantities. Soybeans have become one of the principal grain crops of the country. The 1946 crop was 196 million bushels. Corn oil and lard are two other native products that find their way into oleo. It would be impossible to ban that compound when all the ingredients are already in the country.

But even now, the American producers of these fats and oils are looking ahead fearfully to the recovery of the East Indies and renewed competition in the production of edible vegetable oil. In 1936 Uncle Sam imported 178 million pounds of tropical oils at an average price of less than four and one-half cents a pound. American farmers who grow edible fats or oils, and would suffer by a renewal of that competition, are now agitating for higher protection.

SENATOR EULER holds out the hope that Canadian margarine could be made without spending dollars for vegetable oil imports. This is predicated on the strength of the new soybean industry in Ontario which reached a million pound production—pounds, not bushels—for the first time in 1946, and the newer sunflower oil industry in Manitoba which boasts of one small extracting plant. Both of these industries would fold up over night against the free importation of unlimited amounts of tropical oils. The condition of safe dependence on Canadian vegetable oils would be a high tariff protection for the growers, which would raise the retail price of the final product and strip it of its main virtue.

So much for the source of the raw material. What about its processing and the distribution of the proceeds? Listen now to J. R. Love of Edmonton, who has struck some telling blows against oleo. In an open letter to M.P.s written last December he says in effect: Butter in Canada comes from 370,000 farms whose operators get 85 per cent of the retail price of the product. Margarine would be made by a few packers, probably close to seaboard, where oil could be pumped from ocean-going tankers. The labor force would be a fraction of that now employed in the manufacture of the butter which would be displaced. The control of the industry would pass into the hands of the relatively few men who control the world's trade in edible oils. The shift from butter would bring work or profit to relatively few Canadians and take work from many.

ANOTHER unfailing result of the admission of oleo would be to inject a perennially contentious issue into Canadian politics. It has been a highly controversial subject in the U.S. for 75 years and the cause of yearly battles in nearly every legislature in the land if we are to accept the evidence of the American press. From the Farm Journal of Philadelphia we cull something that fits into the record at this point.

Heavy taxes are levied by state and federal governments against oleo, the proceeds of which are largely used in policing the trade. With a wide price differential between two products, hard to distinguish by undiscriminating consumers, the temptation to fraud penetrates into every village and hamlet in the land. It requires an army of inspectors to protect the public. The food and drug administration for the U.S. reports one flagrant case of an individual who made a profit of \$15,000 in two months by buying oleo at 16 cents to 22 cents a pound, coloring it, and reselling to retailers at 45 cents, from

whom it went to consumers at 65 cents a pound. Total exclusion, according to dairymen in Canada, is easier if not cheaper in the end.

THese are some of the questions raised when Bill B was introduced into the Canadian Senate on February 18 of this year. On the narrow moral issue the ayes have it. It is a monstrous proposition to deny people access to cheap food. If that is all there is to the question of oleo exclusion, would that we had a Richard Cobden or a John Bright to set the heather afire as they did in the crusade for cheap bread a century ago in Britain.

But the oleo question in Canada is not so simple as the Corn Laws in England were for the Leaguers. That's the way McMillan, White, Love and Co. tell their story. The agriculture of Victorian England had some alternatives. Landlords could adjust themselves to lower rents. Tenants could abandon wheat for other crops. Agriculture, even so, languished nigh unto death, but agriculture was of little account in industrial Britain. A resurgent nation bent on imperial expansion went on to more exciting adventures. Doctrinaire Manchester Liberalism will find some of these elements lacking in the Canadian oleo situation today.

Another defender of protected butter has said: "The dairy business is the main reliance of farmers on marginal land, the farmer in remote districts, the operators of small, under-capitalized farms. The standard of living on these farms is on the whole no better than that of the urban poor on whose behalf the admission of oleo is urged. There are rural slums as well as city slums. To further depress the lot of these rural folk is as immoral as to withhold oleo from urbanites."

These are the main arguments put forward by the contending factions at Ottawa following Senator Euler's reintroduction of the subject on February 18. The debate still continues as this is written.

SHould parliament decide to continue the exclusion of oleo two complications will arise—Newfoundland and the I.T.O.

In the recent negotiations for the admission of Newfoundland into confederation it was discovered that the Atlantic Island, having an insignificant dairy industry of its own, depends on oleo made, incidentally, from whale and seal oil refined in Toronto. One of her stipulations is that she would be permitted to continue to import or make oleo after becoming a Canadian province notwithstanding what is decreed by the Dairy Industries Act, which prohibits import of oleo into Canada. A very reasonable request to which few Canadians would object. But the B.N.A. Act forbids provinces to bar the produce of other provinces. Clearly it would be necessary to tinker with the sacred act if oleo is to be kept out of the mainland provinces.

The I.T.O. agreement reached at Havana last year forbids trade manipulation by the sort of embargo that keeps oleo out of Canada. The Minister of External Affairs was asked pointedly in the House if Canada's ratification of the treaty would effect the continuance of oleo exclusion. His answer is by no means clear. Senator Euler suggests that it could not be since at that time the law officers of the crown had not made up their minds about it. It may mean that if Canadians still wish to exclude it they may have to repeal the embargo and substitute in its place a tariff high enough to keep it out.

Canadians can afford to leave these subsidiary problems till they press for solution. Why borrow more trouble? The central problem of exclusion is difficult enough when no two of us agree on the relative importance of the many issues it raises.

Mating Time

Romance in Nature is often deadly

By GILL SHARK

If you think you've been unlucky at love, you ought to consider the ways of the wild and be glad. Now suppose you were a spider—a black widow, or a plain jumping spider, you take your choice. How would you go about wooing the lady of your desire? Or suppose you were a buck deer wondering if love had passed you by? Or a cold, neglected little garter snake?

Take the spider mentioned above. A real artist in love making, he performs a sort of off-balance dance around the one he loves, weaving from side to side, until love has triumphed. But seldom a story-book ending here; ten to one the female will eat him alive.

The buck deer we talked of is the arrogant lover, the regal male and the beater of females! Usually prodding antlers are used to harry the doe into submission, but often enough show-off tactics and bluster are used to win the day. The lordly muley will fight at the slightest provocation, to prove to the wily doe what protection he can offer her; and it is not uncommon for outdoorsmen to find whitened skeletons of bucks who died in combat, their horns still locked together in death.

The long-winged gannets of the Gaspe Peninsula perform a ritual of love that is touching when understood. Usually silent and minders of their own business, the gannets become extremely noisy during the breeding season; and on the foam-capped crags of the Atlantic (and inland) their loud grunting and whistling can be heard afar. Love seems to try their emotions, for they become fretful and quarrelsome; but once they have mated, they are affectionate and domestic. Like the wild goose of Canada's north, they stay true to their first love forever; and if either mate is killed, or dies, the bereaved gannet finishes the journey alone.

In the underwater world, romance has its day, too. The lowly sucker which comes up the rivers of the west to spawn, practices a ritual which we would consider a bit on the too, too side. The male (and some authorities are convinced this is the general rule in the human world, too), is the pursued, not the pursuer. Above some rapids, preferably in the shadow of a log, he finds a pool, where he builds a sort of nest. An egg-laden female is attracted and may be repulsed continually until the male is convinced she is definitely his type. She lays her eggs in the tiny nest he has scooped on the sand; the male fish then takes the nest and sprinkles the eggs, fertilizing them. Both fishes part then, the "running" drive gone from them. They return to the lake from whence they came, unknowing each other and uncaring; and the young minnows hatch and make their way alone in a world where other fishes need a few thousand minnows for a good meal.

Cutest and wildest of the female sex are found in the more advanced forms of animal life. A little red squirrel will give her lover a long and tiring chase, chattering and taunting him for miles. The female fox—always a trick shark—follows a similar routine, but she never overdoes it; she always keeps a watchful eye to see that her handsome suitor is following.

For any idealists who are left, consider the birds of the forest. The love-making of robins and bluebirds is a lesson in courtship at its best; and as proof that marriage can endure, they return year after year to the same little spot where they first met and loved and set up housekeeping, until, in one form or another, death does them part.

Farm Service Facts

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Ways to Reduce Mower Draft and Prevent Clogging

A mower that has been used for several seasons may get sufficiently out of adjustment that the draft is increased anywhere from 10 to 50 per cent. A few simple adjustments will go a long way to reduce this unnecessary draft and at the same time prevent delays due to clogging and breakage. Two of the main causes are discussed below, with illustrations and suggested adjustments to remedy them.

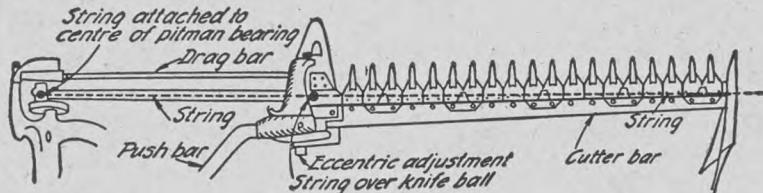
Alignment of Cutter Bar

Probably the most common cause of heavy draft lies in the cutter bar getting out of alignment. When a mower is in operation, the pitman boxing, the ball head of the knife, and the outer end of the knife should all be in a straight line. But the outer end of the cutter bar

the centre of the next on each stroke of the pitman. All sections should be centred when the knife is at the extreme end of the stroke . . . see illustration.

If the sections do not centre, the whole cutter bar assembly needs to be moved by either lengthening or shortening both the push bar and drag bar.

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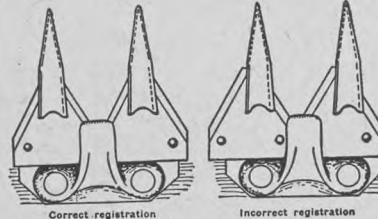
lags a little, and to compensate for this lag the outer end (when at rest) must be slightly ahead of the inner end. A new mower is adjusted this way, but as it wears with usage the amount of "lead" is gradually lessened. Unless it is readjusted, it reaches the point where, in operation, the outer end may lag an inch or more behind the inner end . . . increasing draft and decreasing its mowing efficiency.

The above illustration shows how to check the alignment. To be accurate, the machine must be placed on level ground (or on a floor) . . . the pole raised to working height . . . the tilting lever set so the bar is level . . . the outer end of the cutter bar pulled back to take up all slack . . . and the pitman wheel rotated until the pin is at its lowest point. Then stretch a string from the centre of the pitman bearing along the top of the pitman, across the centre of the knife-head ball, and attach it to the outer shoe. For correct "lead" the outer end of the knife should be one inch ahead of the inner end, on a 5-foot mower.

A faulty "lead" can usually be corrected by adjusting the lengths of the push bar and drag bar. Some mowers have an eccentric bushing on the rear hinge pin for this purpose. In extreme cases, it may be necessary to replace worn hinge pins or fit worn pin holes with bronze bushings. Sometimes, the push bar has been sprung and needs to be straightened.

Registration of the Knife

A second common cause is faulty registration of the knife. For clean cutting, sections of the knife should travel from the centre of one guard plate to



FOR SMOOTHER WORK WITH TRACTOR LOADERS

1. The success of hydraulic loading attachments for tractors depends upon smooth, easy operation. The operator should be careful to use the fluid recommended by the manufacturer.

2. Under no circumstances, should fluid be added to the tank when the hydraulic pistons are extended, because when they are returned to the closed position more oil is forced into the tank, causing it to overflow and possibly damaging it.

3. It is very important that the air vent on the hydraulic tank be checked every day. Plugged and dirty vents cause jerky or slow operation.



4. If hydraulic fluid foams or overflows at the tank vent, it may be due to any one of four causes:

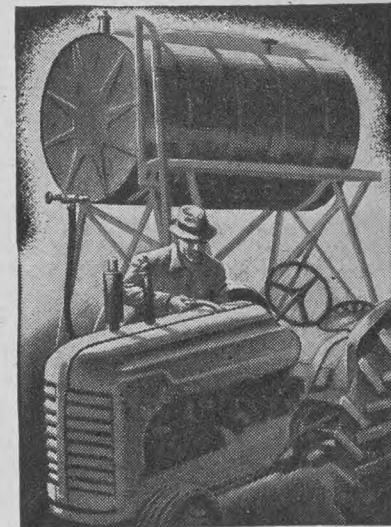
- Not sufficient fluid in the tank.
- Water or other impurity in fluid.
- Fluid of too heavy a grade.
- Air leak in hydraulic lines on suction side of pump. In checking lines for air leaks, lather them with a shaving brush.

5. In replacing dirty fluid with clean, be sure to drain the lines well.

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FARM DIVISION

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A farm storage tank pays five ways. First and foremost, it permits you to buy and store enough fuel at one time to be sure of having a supply on hand when you need it. No costly delays when tractors stand idle waiting for fuel to be delivered.

Second, it helps to keep fuel clean and avoid plugging of fuel lines and carburetors with grit, dust or water. The tank can be mounted with enough slant to cause any impurities to settle away from the outlet.

Third, it saves time in re-fueling tractors and trucks, if the tank is mounted overhead. Gravity flow is quicker than pumping or pouring. And fourth, it prevents the spillage of the pump-and-pail method . . . or the waste of the "last gallon" that is often left in the bottom of each barrel.

Last but not least, a farm storage tank pays in added safety, because it can be located well away from house, barn or sheds.

Tanks come in three sizes. The cost is reasonable. See your Imperial Oil Agent.

Filter Care Cuts Tractor Wear

Tractor motor oil seldom "wears out." It becomes contaminated with dirt, carbon, etc., which causes wear. If the oil filter is cleansed and serviced regularly, it helps greatly to improve tractor performance. A dirty filter means dirty oil and unnecessary wear. It is important that you follow the instruction book and service the oil filter as often as recommended.

Another cause of rapid motor wear is the entrance of dirt into the engine through leaks in the connections between the air cleaner and the carburetor. Check for loose connections. Under normal working conditions, the air cleaner needs daily servicing . . . oftener under extremely dirty conditions . . . but be sure to keep the oil level at the proper mark. For best results, use clean oil of the recommended grade.



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The Model "CC" makes deep, productive seed beds, summer-fallows, "roughs" stubble, kills weeds, cultivates orchards, and renovates alfalfa or pasture land. Individual tooth adjustment, an exclusive feature, assures good work on every tillage job.

Wheels-inside-the-frame design makes it easy to cultivate close to fences or other field obstructions. A positive power lift and depth regulator lets you boss the tillage job from the tractor seat.

The Model "CC" is made in 5-, 6-1/2-, 8-, 10-, 11-1/2-, and 14-1/2-foot sizes. It is available with either stiff or spring teeth.

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HORTICULTURE



May is Nature's month of promises, but sometimes she doesn't carry them out.

Bracing Fruit Trees

SOMETIMES the main branches of fruit trees are split off from the trunk and unless promptly treated will leave an unsightly tree or perhaps ruin it completely. Even healthy and strong-growing apple trees up to about 20 years of age can be effectively braced with heavy galvanized iron (Number 9) and heavy screw eyes. Screw eyes should have a small eye and a shank about 2½ inches in length. The larger the threaded part of the shank is, the more grip it will have in the wood. The only tools needed are a pair of wire-cutting pliers, a hammer, and a short iron bar for twisting the wire.

Generally speaking it is advisable to put the brace about one-third of the distance from the crotch to the end of the branch. The closer to the crotch, the heavier the strain on the brace, and the farther away from the crotch, the more material will be needed. Sometimes in quite large trees it is best to put a wire brace down a few feet from the crotch and another higher up.

If a branch has broken away, or is splitting off from the trunk and is fairly large, it can be drawn up to the remainder of the tree with a block and tackle, and then braced with screw eyes and twisted wire to another strong branch on the opposite side of the tree. Sometimes in the case of a very large branch it is desirable to put a bolt right through the split-off branch and the trunk of the tree, but if this is done there should be a good washer at either end imbedded against the wood.

Sometimes, if the centre of the tree is fairly open and the tree is fairly large, with a naturally poor crotch, wire braces can extend from the centre of the open space to each one of the main limbs, and joined in the centre by a stout harness or other metal ring heavy enough to take the strain. The wire in all cases is run from one screw-eye across to the other and back again where the two free ends are bent and twisted solidly and then both strands of wire twisted in the centre until they are tight and the limbs to be braced brought as well as possible into position.

Making Grafting Wax

HERE is a formula for a good grafting wax, recommended by Dr. R. J. Hilton, of the University of Alberta, Edmonton. It is based on considerable experience in the grafting and frame working of fruit trees at the Dominion Experimental Station, Kentville, Nova Scotia. The Dominion Department of Agriculture, incidentally, has recently issued a bulletin written by Dr. Hilton entitled "Frame-Working Fruit Trees," which can be obtained from Ottawa or any Dominion Government office by re-

questing Bulletin Number 136. It is excellently illustrated.

The grafting wax formula recommended is made from six pounds, 10 ounces of resin, one pound tallow, one pound, four ounces paraffin wax, and one pound, eight ounces of Venetian Red powder. Half the recipe or less can be used if only a small quantity of wax is needed. The Venetian Red powder colors the wax a vivid red-brown and helps to give it a good binding property so that it will withstand extremes of heat and cold better, without running or cracking off.

To make the wax, melt the resin and paraffin first, then take the container off the fire and put in the tallow. When this has melted, stir in the Venetian Red powder, which should have been heated while the resin and paraffin were melting, in order to drive off the air. Finally, the thick, red liquid wax is poured into a container of cold water and separated into pieces about one pound each. Hands and forearms should be well covered with tallow to keep the wax from sticking. The wax should be pulled like toffee until it is smooth.

When used in the field, it is necessary, of course, to heat it; and for this purpose an old five-gallon tin, which will burn wood, charcoal, coal or coke, will make a useful brazier. A pound of the wax should be left in the wax-pot until any air bubbles have been driven off and the level of the wax returned to normal after the froth has disappeared. Use when it cools off enough to stick to the brush like a stiff paint. A one-inch paint brush is satisfactory, and the handle can be extended by firmly tying a large scion to it so that it will reach farther.

Clean Up Vegetable Storage

ANY time now is a good time to clean up the fruit and vegetable storage. Most products of this group like a somewhat moist storage, but this unfortunately encourages the development of various molds or other organisms. These feed on the wood or other parts of the storage and cause it to rot and disintegrate. The molds also give rise to various odors that may be absorbed by the fresh product and taint them.

When the storage season is over, a very thorough cleaning of the storage room is advisable. The first step is to remove everything from the room, even to the last bushel of apples or bag of potatoes. If the room can be drained, the first cleaning should be with water, taking care to scrub all dirty or moldy spots with some kind of abrasive or a wire brush. It is a tedious job but really necessary.

When this is completed, and all excess water swept out or dried, a good application of fungicide is necessary. This, if applied very thoroughly, will

kill remaining organisms, but it should be of a non-corrosive character and should not leave odors that will be harmful to products stored later.

A really thorough cleaning of the storage means again washing down with water followed by a lengthy airing after the fungicide has been on for a few days. If possible, doors and windows of the storage should be left open all summer, since this also helps to dry out the structural parts of the storage, which may have become thoroughly wet or dampened during the winter.

Dwarf Lemon and Orange Trees

I WONDER how many people residing in Saskatchewan were able to pluck lemons for pies during the Christmas season, or fresh, ripe oranges in November, from lemon and orange trees right in their own home, as we were able to do.

Although these dwarf lemon and orange plants were procured from a seedhouse in Ontario nine years ago, they did not ripen fruit until last spring for the first time. One of the reasons for this, we have discovered, was the fact that the hundred-pound nail kegs cut in halves, in which they were planted, were too large, holding too much soil, thus taking the plants several years to use up the excess soil food, and consequently going to height instead of bloom.

These plants are supposed to bear at four years of age, but ours were six years old before they bloomed and after setting 60-odd fruits, shot into wild growth again, thus robbing the fruits which later died off. The trees by then had reached a height of 37 inches, whereas they should only be 18 inches. Correspondence with the firm we bought from, advised us that the containers were too large, promoting too much growth instead of bearing fruit. Their advice of cutting both plants back to 20 inches on growth tips worked miracles, because within two months' time they were literally covered with buds, which formed fruit that grew to maturity and ripened.

The lemons are much larger than commercial varieties obtained here, and were 8 $\frac{1}{2}$ by 9 inches in circumference, and weighed 5 $\frac{1}{4}$ ounces each. They have a higher sugar content than imported strains and have a delicate texture. One lemon makes two nine-inch pies.

The oranges, however, are smaller than commercial fruit, but much stronger in flavor. We used most of ours for puddings and pies, one orange being sufficient for one standard pie, or a pudding serving six.

Two months after picking all fruit off the trees they bloomed again and set two lemons and eight oranges. They are now blooming profusely for the second time within a month and have a total of 170 buds and blossoms.

Many persons feel that propagating dwarf oranges and lemons entails a great deal of work, but we found that these trees are just as easily looked after as any other potted house plant. They require a good soaking every two or three days, plenty of sunlight and a fairly even temperature. They freeze easily and are not to be placed outdoors, as they sunscald readily. Fruit grown more than compensates the grower for work entailed, and when trees are in bloom their appearance and odor outshine any flowering plants I have seen to date, permeating the entire house for days with their sweet fragrance.—C.H.M., Choiceland, Sask.

Black Knot in Plums

ONE of the diseases that plums may be affected by is black knot. It is named from the spindle-shaped knotty swellings that appear on the twig. These may completely surround a twig, or they may be confined principally to one side. These growths are small at first, but get larger as time goes on and their

surfaces become cracked. Early in the season they are greenish in color, but become black later.

These knots should be removed and burned twice a year, once late in the spring soon after they can be seen and again in the fall. They will have to be cut out by making a cut a few inches below the knot.

Black knot can also be brought under control by spraying with one pound of water-soluble lime sulphur to four gallons of water before the buds open in the spring. Spraying must be very thorough, the branches and trunk completely wetted. Unless there is a bad attack on many trees, the cutting-out plan is preferable.

Layering Gooseberries

THE simplest method of propagating gooseberries is by bending a few branches in the spring so that a portion of the stem can be covered with soil, leaving the tip of the branches exposed. The soil should be three or four inches deep and must be kept moist throughout the whole growing season. By autumn roots will have been formed on the covered part of the stem and, if the layer is well covered with additional soil during the winter and left undisturbed, it may be dug up and separated from the parent bush and planted as a separate plant in the spring. Layering is the accepted method of propagating gooseberries, and Pixwell sometimes layers naturally.

Transplanting Strawberries

IF the new strawberry bed has not been set out yet from plants which you had planned to use from the old bed, the sooner it is done the better. The strawberry naturally propagates by runners which are sent out in many directions from the parent plant and these in turn produce new plants which later send out additional runners.

When transplanting strawberry plants to a new bed, it is better to use plants reasonably close to the parent plant, since these were probably made earlier in the season and are generally stronger and better-rooted than those produced later. As a consequence, they should give better results.

Move a little ball of soil with the plant if at all possible, and either do the transplanting when the soil is moist, or, if at all feasible, see that there is plenty of moisture available to give the new plants a good start. Strawberries like plenty of moisture.

Shade Trees Are Valuable

IT has been estimated that in the United States somewhere around \$100 million per year is spent for the maintenance of shade trees. This includes an estimated \$10 or \$15 million per year to maintain shade trees on private properties, in addition to the expenditures of states, cities, institutions and utility companies.

Representatives of the National Farmers' Union of England and Wales last year visited Germany on an official mission. The four members of the mission reported in part as follows on their return:

"The landscape has a charm and character of its own. The roads are almost everywhere lined with trees on both sides, although there is no fence. The road is open to the fields."

"A number of varieties of trees are used for roadside plantings, though in general, different kinds are not mixed, and several miles of a single species are often seen. Lime trees are, of course, among the favorites, and so apparently are horse chestnuts. The most interesting sight, however, is the apple, which is used over hundreds of miles in total and compensates for scanty shade, by a useful crop of fruit. Apparently damage or pilfering are unknown."



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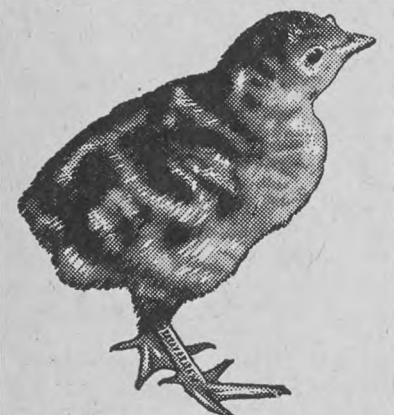
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Ballet in the Beehive

By DAN McCOWAN

A FEW years ago, while attending a beekeepers' convention in a large eastern city, I saw an extraordinary moving picture film. By means of skilful micro-photography it portrayed the behavior of a bee on returning to the hive after having made discovery of a great treasure trove of pollen or nectar. When a worker bee "strikes it rich," the excited insect, having taken on a sample load, makes a bee line for home where from a chosen vantage point on a central honeycomb it immediately communicates the glad tidings, not by word of mouth, but by performing a curious complicated dance.

The delirious performance of the honeymaker, a combination of Highland Fling and Shimmy, was staged on a cleared space on the vertical comb and before an attentive audience of others of its kind. The central figure in this demonstration spun hurriedly in small circles, now clockwise and again counter-clockwise but ever in well defined pattern.

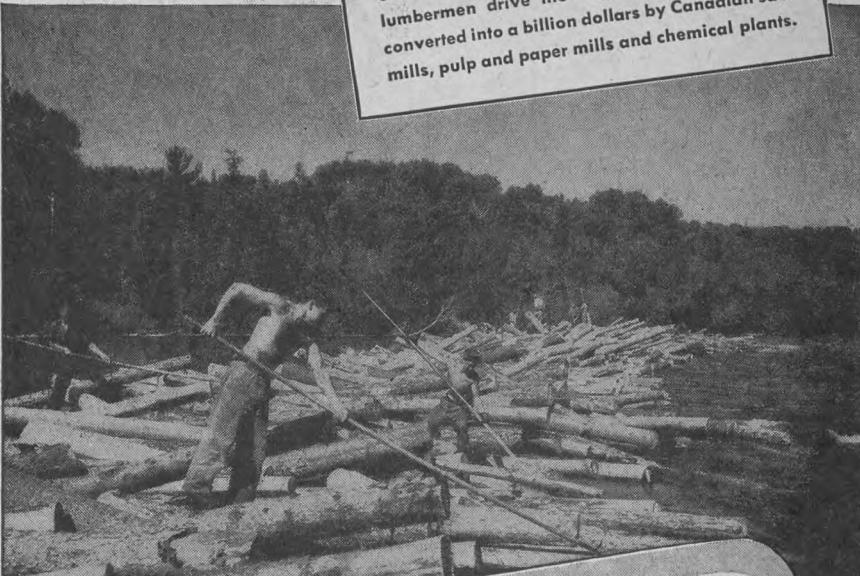
To me the solo performance of the dancing insect was entrancing but incomprehensible. Maurice Maeterlinck in his "Life of the Bee," (which, by the way, I recently heard a high school student describe as a "Honey of a Book"), maintained that a bee, having located a rich source of nectar, could bring others to the spot but was apparently unable to send them thither. Thus, relying on his authority and on that of Fabre, I was at a loss to understand why the lucky prospector dilly-dallied in an apparently fantastic hornpipe instead of at once leading its fellows to the new found treasure. It did not occur to me then, nor to the much more learned apiarists present, that the dancing bee was actually engaged in a form of charade in which every movement, rightly interpreted, gave clue to the precise location of the new found El Dorado.

JUST recently, as a result of patient research and painstaking experiment, Dr. K. von Frisch, a noted scientist, announced that two separate dances are performed, one in which the bee describes circles such as I saw in the moving picture—the other wherein the insect taking the floor becomes, so to speak, a jitterbug. Both, however, serve to convey news of important food discovery to members of the colony. Should the nectar or pollen lie within 100 yards of the hive, the bee, returning from foraging, does the round dance, with variations—if beyond that limit the more intricate jig is resorted to. At distances over half a mile the form of the dance grows more and more simple. Formerly Dr. Frisch believed that one variety of dance had to do with discovery of pollen—the other with the finding of nectar. Now however, in the light of further knowledge, he states that both dances refer to common source of new found wealth.

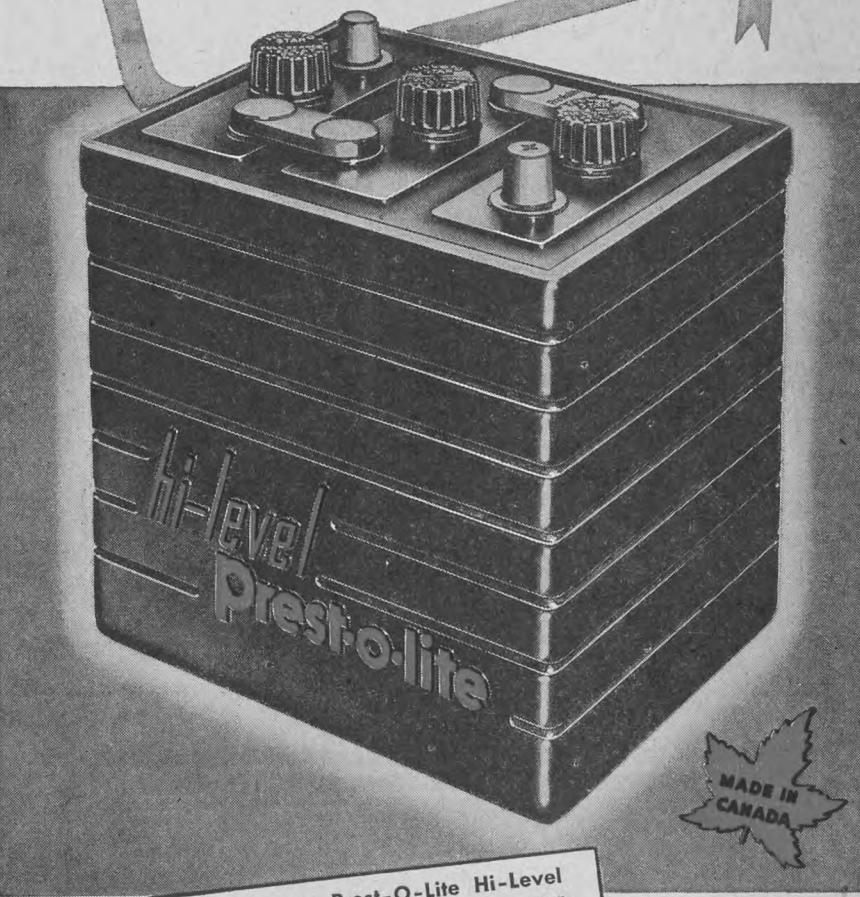
Probing further into secrets of the hive, Dr. Frisch concludes that the dancing bee can communicate direction as well as distance of a particular source of food to others in the colony. He states that if while footing it bravely on the comb the bee moves straight upwards it means that nectar or pollen may be found in the general direction from whence the sun's rays come at the moment; if straight downwards the opposite direction is indicated. Deviation from this vertical line would of course show that the food lay at an angle, to right or left as the case might be. Experiments with bees dancing on a comb purposely held in a horizontal position showed conclusively that the direction followed in the main by the individual performer corresponded exactly to that in which the food supply was situated.

Photograph courtesy Abitibi Power and Paper Co. Ltd.

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USE IRRIGATION WATER THIS WAY

Continued from page 17

schemes. The methods of irrigation are likewise more elaborate. These include free flooding from contour ditches, controlled flooding or the border systems, and furrow irrigations, sub-irrigation, and sprinkler irrigations.

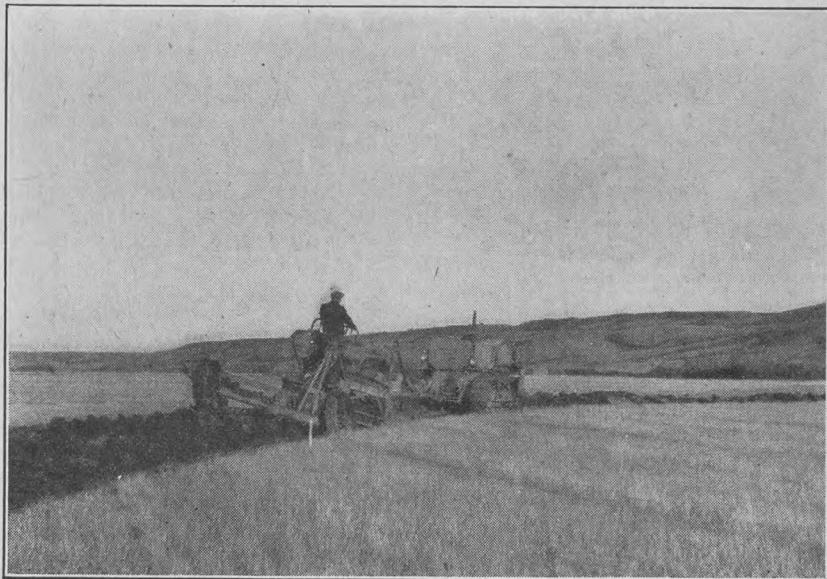
FREE flooding from field laterals or contour ditches is still the most common method used on the prairies for applying irrigation where grain and forage crops are grown. This method does not make the most efficient use of water and usually requires much labor, but it is accomplished with the least preparation of land and, therefore, the least cash outlay at the outset. It is the best system to use where

terminated before any heavy land leveling is undertaken.

Every project owner should have a float, or the use of one, in order that the land to be irrigated may be floated before each crop is seeded. Floating smooths the ground surface and makes it possible for the irrigator to apply water more easily and evenly. Floating is usually most effective if done diagonally to the dead furrows, and should be done two ways.

The soil needs to be fairly dry for the float to work and no attempt should be made to float when the soil is wet, as this will cause puddling. A light working of the land immediately after floating will reduce danger of drifting.

The field laterals that take off from the lead ditch are usually run on a grade of one to 2.5 inches fall in every 100 feet or from 0.1 to 0.2 per cent. Flatter grades, as low as .05 per cent, or even less, may be used in order to keep the ditch up, to reach some higher land, but this reduces the velocity of



W. L. Graves, Fairy Hill, Sask., constructs low dykes on the contour for flood irrigation.

the topography is rolling and the slopes are too steep for other methods. Free flooding from contour ditches is widely used on large irrigation projects, and this method is the choice of many irrigators on smaller developments.

A free flooding system generally consists of a main supply ditch that carries the water from the source of supply to the high side of the field to be irrigated. Field laterals or contour ditches take off from this head ditch to provide a distribution system through which the water may be spread to all parts of the field. The location of the field laterals depends upon the contour of the land, and the spacing between ditches is variable on account of the different slopes encountered across the field. As a result the laterals may run as close as 50 feet on the steeper slopes and spread out to 200 or 300 feet on the flatter land.

This adds somewhat to the inconvenience of farming the strips between ditches, though in the case of grains this is not serious, since the field laterals are not opened until after the crop is seeded, and are plowed in before harvest. The main difficulty is in applying the irrigation uniformly.

MOST fields may be greatly improved for irrigation by some land leveling, so that the water applied may be more evenly distributed and soil erosion minimized. A uniform slope or fall of six inches (0.5 per cent) or less every 100 feet is ideal, but much greater slopes may be irrigated quite successfully, provided the slope in each case is uniform.

Land leveling where the topography is changed requires the services of the specialist and a soil survey should be made of the area and topography de-

the flowing water and usually results in sediment being deposited in the ditch. Grades of 0.2 per cent and higher give velocities that are apt to cause cutting and erosion.

THE most satisfactory spacing for field laterals will depend mainly on the irrigating head that may be available, the porosity of the soil, and the preparation of the land.

Where the land slopes gently and is well graded, a rule suggested is to space the laterals 100 feet apart where an irrigating head of about 2.5 cubic feet per second is available, 150 feet apart where a head of three to four second feet is available; and where only one second foot of water is available, a lateral spacing of 60 feet is recommended.

These spacings may be increased 50 per cent or more for hay and pasture lands, except on very sandy or gravelly soils where it may be necessary to reduce the distances between laterals.

These spacings are perhaps narrower than most irrigators use: However, the individual projects on the prairies are generally not large and the narrower spacings suggested would make it possible for the irrigator to make more efficient use of the limited supply of water that is generally available.

These projects are located mainly in the dry farming areas where precipitation received produces a crop most years and the purpose of irrigation is mainly to supplement the rainfall during the periods of drought. For this reason a high degree of control over the amount of water applied is essential and in the case of the free flooding system this can be best obtained with preparation of land and rather close spacing of field laterals.

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A DITCH that will carry one or two seconds feet of water can be made by turning out a furrow six inches deep along the line of stakes marking the lateral, then coming back and turning out a second furrow of the same depth along the same line immediately below the first furrow. This leaves a rough ditch 12 inches deep with the earth plowed up on both sides.

The next step is to push out the loose dirt with a V-crowder or a ditcher, if one is available. A crowder for making this size of ditch can be made without much difficulty.

For larger ditches, two or more rounds with the plow are necessary and a Martin type of ditcher should be used, unless one of the more modern "one-man" two-wing type of ditchers is available. A number of these labor-saving machines are now on the market and are particularly useful where tractor power is used.

Good strong banks are especially important in an irrigation ditch because the irrigating head must be carried in the ditch above ground level before it finally flows on to the land. By installing a canvas or earth dam below the point or points of diversion, the water is made to rise in the ditch until it flows out over the land through openings cut in the lower bank of the ditch.

The border ditch method of irrigation is recommended in place of the free flooding methods where the topography is sufficiently uniform. In the border ditch system, parallel ditches are run straight across the field 50 to 200 feet apart, depending on the irrigating head available, the soil, and the smoothness of the surface. The strips are uniform in width and water may be turned on the land from the border ditch, on one side or the other. As a result, a more uniform application of water may be obtained than with the free-flooding or the border dyke method. The ditches are usually run down the slope, or on the bias across the slope where the straight down slope would give too high a velocity.

SPACE does not permit a discussion of the other methods of irrigation used including border dyke, sub-irrigation and sprinkler irrigation. Reference should however be made to the furrow system, since this is the method commonly used in irrigating garden and other row crops. This system is especially well suited for small streams such as might be supplied by pumping from a dugout or small dam.

Furrows may be made with a shovel-plow, a furrowing implement, or even a hoe. Water is turned into the upper



"There goes another rejection slip!"

end of each furrow in small streams and as it runs down the furrow it soaks into the soil. Flooding between furrows needs to be avoided, since it usually causes puddling of the soil. Irrigated row crops need to be cultivated frequently to keep the soil in good tilth.

Small irrigation projects fully developed and utilized should do much to help stabilize agriculture on the prairies through the production of feed and vegetables when drought prevails. The example John Glen set 70 years ago still applies.



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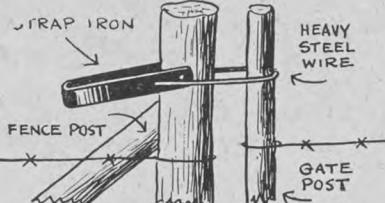
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Saving farm labor saves money in busy seasons

Gate Tightener

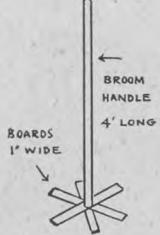
You can make a handy and efficient gate tightener with a two-foot piece of light strap iron and a short piece of heavy steel wire. At each end of the strap iron bore a hole one inch back and another two inches farther than the first. Bend the strap iron to a U shape, spike to the fence post with



spikes through the end holes. Fasten one end of steel wire to the strap iron through second hole, bending inside to keep from slipping out. Raise strap iron to upright, or forward position, and gauge length of steel wire necessary by passing around gate post, then secure other end of wire to strap iron. To operate, pull gate post in position by hand, slip wire over the top, pull back strap iron to the position shown in diagram, and the gate is held tightly.—Ray D. Overgard.

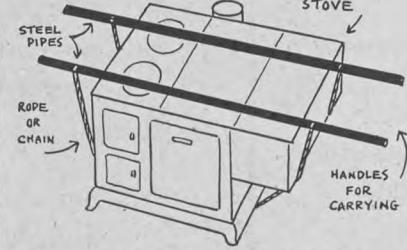
Mash Mixer

Mixing chick or poultry mash by hand is difficult because one's hand gets sore and chafes. You can make a handy mixer out of a piece of broom handle and three pieces of 6x2x1-inch strips. Drill a hole in one of the pieces not quite the size of the broom handle, and whittle the handle to fit. Fit the second short piece over the first at the desired angle, by cutting out a quarter of an inch or more with saw and chisel. Nail fast and fit the third piece to the second in the same way and nail. If you use a pail you can mix readily with this mash mixer. It can be made any size for use in any size of container.—Mrs. Edward Helm.



Moving the Cook Stove

If you can get a good hold on the cook stove when moving it, the work is not so hard. Take two 1 1/2-inch steel pipes two or three feet longer than the length of the stove. Lay lengthwise of the stove, one near each edge. Use two ropes or chains, fasten one to each pipe

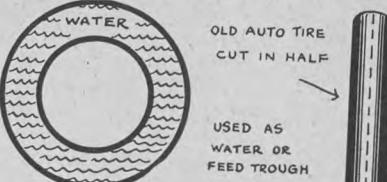


near one end where it will be up against the stove, pass underneath the stove and fasten as tightly as possible to the other end of the pipe. Do the same with each pipe, and presto! handles for two men to move the stove without difficulty.—G. C. Glubrecht.

It is surprising how many things can be hung out of the way from the ceiling. That is, of course, provided that they do not hang down too far. For instance staples can be kept in an old pot and strictly fencing tools put in it and hung at easy reach. Everyone then knows just where they are at and still they are out staples can be kept in an old pot and better than putting occasionally used supplies in some out of the way building or loft.

Trough From Auto Tire

An old automobile tire casing cut in two along the centre tread, will make



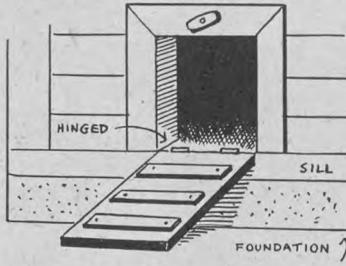
two handy troughs for the poultry—one for watering and the other for feeding.—E. W. Moses, Jr.

Starting Small Screws

When starting small screw nails that are too small to be readily gripped with the fingers, take a cotter pin and grind it as shown. If you have a rat tail file, give each ground surface a touch with it to make the tips of the cotterpin concave so that they will go into the slots in the screw nail heads easier. Insert the ends in the slots by pressing together. They will spring out enough to grasp the screw and it can then be started. An ordinary small screwdriver will complete the work.—D.C.R.

Foot Walk for Chickens

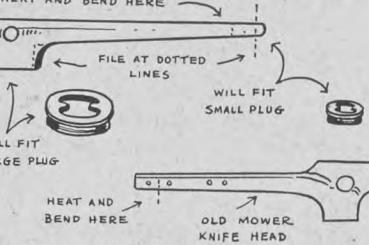
If the small outlet door on the hen house is hinged at the bottom instead of the top or the side, it can be made



to serve as a foot-walk for the small chicks or chickens. Nailing a few slats on the inside of the door will keep the birds from slipping. A simple wooden button at the top will keep the door closed.—Paul Tremblay.

Gas Drum Plug Wrench

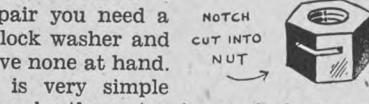
I used an old mower machine knife part (the piece riveted to the Pitman end of the knife, with the socket ball) to make a useful gas plug wrench which will fit the new type plugs. Such a wrench will always be handy around the



gas drum, since it cannot be used for any other purpose. One end of the part will fit the large plugs, and the other can be made to fit the small plugs by filing at two places on the dotted lines in the sketch, heating and bending.—Paul Tremblay.

Emergency Lock Washer

Sometimes on a repair you need a lock washer and have none at hand. It is very simple to make the nut act as a lock washer, by cutting one-third of the way into the nut with a hacksaw near the top of the nut, as shown in the drawing. After the cut is made, give it a light blow with the hammer. This slightly closes the cut, and when the nut is screwed on the bolt, it will never come off.—Albert Loisch.



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NEW ZEALAND FARMS ON GRASS

Continued from page 8

A visit to the meat works (packing house) provides a vivid example of how a constructive breeding program produces quality and uniformity in carcasses. Thousands of lamb carcasses hang on the rail in the freezer room; and they are just like peas in a pod. It has been said by many authorities that New Zealand sheep breeders lead the world in developing breeds of sheep for the lamb trade. The writer is quite convinced of this fact, because nowhere have sheep breeders so constructively built their flocks to meet the consumer demand. Fat lambs, less than five months old, trail to market by the thousands. Good pasture is the only feed used, and costs of production are kept to a minimum.

THE Romney is the most important breed. It has undergone considerable change since the original importation and is now regarded as a distinct breed. The Corriedale is another important breed which is largely confined to the Canterbury Province. It is a distinct New Zealand breed, obtaining its origin from the fine-wooled Merino ewe and the Lincoln ram. The fat lamb industry depends upon a cross-breeding program. Romney ewes and Corriedale ewes are crossed with the Southdown ram, producing a uniform lamb. Where pastures are inadequate for fat lamb production, the hill country sheep farmer produces a type of ewe specially suited as a mother of fat lambs. In some provinces, the Romney is used entirely for fat lamb production with considerable success. Other breeds of sheep are grown, such as the Down breeds, Leicesters, Lincoln, Suffolk, but their numbers are not as large as the above mentioned breeds.

To a Canadian, it is amazing to see the carrying capacity of pastures. On the better lands with grass and white clover, it is not uncommon to see 10 sheep per acre per year being grazed. This high carrying capacity has been largely brought about through the efforts of the agricultural scientist, whose work has had a ready adoption by the farmer.

The sheep industry of New Zealand is a living example of what can be accomplished when the farmer and the agricultural scientist work together in developing a livestock policy in keeping with proper land use.

THERE are approximately 1,662,000 dairy cows that use approximately five million acres of the land area of New Zealand. Eighty-five per cent of these are Jerseys of a very high grade. They are the result of five to six generations of top crossing with purebred Jersey sires on an original Shorthorn female base. Herd improvement through a well organized policy, along with pasture improvement, has been the key to the success of the dairy industry. The farmer at all times is conscious of the place his butter occupies in the British market, and the necessity of maintaining quality production.

The purebred Jersey breeder is an apt student of breeding principles. It was the writer's privilege to visit the owner of the Champion Jersey cow of New Zealand. His first remark was that he was pleased to meet a Canadian, because he attributed his success to the progeny received from the Jersey herd of Bull and Sons of Brampton, Ontario. Canadian-bred Jerseys, he said, had contributed greatly to the success of New Zealand's Jersey herds today.

Dairy cows are maintained on good pasture for 12 months in the year. The carrying capacity will vary from one

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to two cows per acre. This fact makes the cost of producing milk or butterfat quite low when compared with Canadian costs. Capital expenditures in barns, milking shed and other facilities are low. The milking shed is the main investment. It is designed to obtain the quick handling of large numbers of cows which pass through at the rate of 12 per hour for each double stall. Supplemental feeding of grain and hay in stalls is practically unknown and the shed is free from litter of any kind. The milk is delivered through a releaser direct from the cow to a milk room at the end of the shed. Stripping is not practised by the dairy farmer today. Milk is passed over a cooler and thence to the milk cans for delivery, or it is separated, the cream being then cooled and delivered to a creamery. Cleanliness and sanitation are keynotes in delivering a quality product to the factory.

lar in \$4,000. The funds are used for the administration of the Board. Where special problems of soil erosion occur, further assessments are made on the land that is affected by the problem, and the Dominion Government usually gives a grant of £3, for £1 raised by the Board. Catchment Boards are responsible to a soil conservation council of the Dominion, which convenes periodically to review the recommendations of each Board. This type of policy has worked very well in New Zealand and there has been very little criticism either by the farmers or the public generally.

PIG production is mainly based on the by-products of the dairy industry. Grain is short for pig feeding, and the quality of bacon is not up to the Canadian standard. Until further grain supplies are obtained, the writer cannot see much future for the export bacon industry. At present, there are 549,391 pigs in New Zealand, a decrease from 794,758 in 1937.

Poultry production is in the same position as the pig industry. Lack of grain supplies prohibits quality poultry products going on the export market in any extensive way. At present, there are not sufficient eggs to meet the demand in New Zealand. The chilling of eggs and the quick freezing of poultry products have received little attention.

New Zealand farmers, like farmers in other countries, are short of labor. The farmer has reached the point where it is difficult for him to maintain his present production program. There is no indication by farmers as to where the labor is to be obtained.

Mechanization has relieved the labor situation to a degree. New Zealand is mechanized in all its phases of agriculture, as any other country. Harvester combines are quite common in the wheat areas. Automatic pick-up balers for haying are prevalent and most of the haying is now done on a contract basis for farmers. This method is rather costly to the farmers, but they prefer to have their hay put up this way, because of the shortage of labor. There is a definite shortage of tractors and the shortage of dollars to make United States and Canadian purchases is creating a difficult period for the farmers.

(Note: L. B. Thomson is superintendent of the Dominion Experimental Station, Swift Current, Sask. A native of New Zealand, he has recently returned from a six-month visit to New Zealand and Australia. Another article by Mr. Thomson on Australia, is to follow).



A typical New Zealand milking shed. The cow passes through the stall after she is milked and is replaced by another.



How better cast iron gives jobs to Canadians



The ancient Egyptians spoke of iron as the precious metal. It was used for making swords, armor and ornaments. As early as 332 B.C. iron was being cast into various forms.

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The facts uncovered in this research work were carefully collected by International Nickel and broadcast freely to foundries, manufacturers of machinery and other potential users.



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Placing Nickel anodes in the electrolytic tanks at the Nickel refinery.

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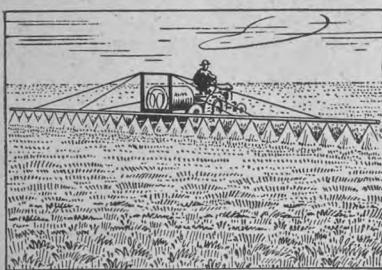
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● This feature is furnished monthly by United Grain Growers Limited **Monthly**

Premier Garson on Coarse Grains Policy

Parliament has passed an amendment to the Canadian Wheat Board Act which, if proclaimed by the government, will extend compulsory marketing through the Canadian Wheat Board to oats and barley but will not affect flax and rye. The amendment met a good deal of opposition in parliament and during discussion the Minister of Trade and Commerce made it clear that the amendment would be proclaimed by the government only on certain conditions. These were:

(a) That complementary legislation should be passed by the legislatures of the Prairie Provinces. Without such legislation effective control could not be maintained under the Dominion Act.

(b) That the government is assured that the plan would be workable and eastern and western farmers can agree upon a price basis.

Whether the amendment should be proclaimed or not has been a matter of considerable discussion in western Canada. The legislature of Saskatchewan promptly passed an Act, which also is not effective until proclaimed, and doubtless would not be proclaimed until the Dominion Act is proclaimed, which would have the effect of preventing any farmer from selling oats and barley at an elevator except to the Canadian Wheat Board. It would leave other transactions in such grains within the province unaffected.

The legislature of Alberta was prorogued without any action being taken, but on the understanding that the government would study the matter and if thought desirable could call a special session of the legislature to deal with it.

The Hon. Stuart Garson, Premier of Manitoba, has been critical of the action of the Dominion government and of the way in which oats and barley might be handled under the Wheat Board if the legislation is proclaimed. His criticisms have been expressed in a statement to the legislature, a radio address, and in correspondence with the Hon. C. D. Howe, Minister of Trade and Commerce of the Dominion government. All these have been published in a pamphlet which the Government of Manitoba has made available for distribution. Farmers who would like to read this material can obtain a copy by applying at any U.G.G. elevator or by writing to the head office of the Company. The point of view expressed by Mr. Garson may be indicated by a few extracts:

"In most public policies advantages are offset by disadvantages. This truth certainly applies to state marketing of grain. It has some advantages, such as price stability. One of the disadvantages of state marketing of oats and barley is this: The oats and barley grower is interested in selling for as good a price as possible. His fellow-Canadians who are buying oats and barley for feed are interested in getting their needs at as low a price as possible. There is here a real and unavoidable conflict of interest. When the western oats and barley grower puts his grain under a federal government board he is putting it under the political control of a House of Commons of 245 members of which 147 come from Ontario and Quebec. Under a democracy the majority govern; and it is natural that the majority will pay some attention to their own interests as they have done in the customs tariff and freight rates, to mention only two matters."

"Under the Dominion scheme, western farmers will be compelled to sell their oats and barley to the Wheat Board at its fixed Fort William price, less freight and handling charges; while

at the same time the oats and barley growers of Ontario and Quebec will be free to sell outside the Wheat Board for a price not less than the Wheat Board's Fort William price, plus handling charges and freight (if not paid by government subsidy). This is what the Dominion scheme seems to propose at a time when the Government of Ontario is engaged in a campaign to greatly expand the production of feed grains in that province."

"The effect of these provisions in practice was that the Wheat Board was changed from being an agency of the wheat producers charged with responsibility for getting the best possible price, to an agency of the government, getting a price which would be fixed by the government, that is a political price, using that phrase in its best sense. Since 1943, when the Wheat Board was changed from being an agency of the wheat growers to being an agency of the government, the price paid to Canadian farmers for their wheat has been determined as a matter of government policy in the light of such considerations as the food agreements with Great Britain and the advantages of holding down the cost of living in Canada, and doubtless other equally worthwhile reasons."

"First, the fact that the government has imposed a general ban upon the export of oats and barley from Canada, including shipments to the United States. Since the domestic demand for oats and barley has not been sufficient to absorb the crop, there is a surplus of oats and barley in the Canadian market at the moment, which certainly cannot have a good effect upon the price, and probably has had a bad one."

"The holding down of the Canadian cost of living and the embargo upon the exports of farm products to the United States are examples of policies which are intelligible and perhaps wise. But they are also national policies, the cost of carrying out which should be paid, in our opinion, by the whole body of the Canadian people and not by the Canadian farmers only."

"What we would like to know is whether in the legislation which you will ask us to complement, these same principles or policies will be followed with regard to oats and barley? Is the Wheat Board to be the agent of the producer of oats and barley charged with the responsibility of securing the best price possible in all available outlets? Or is the Board to be the agency of the government buying oats and barley at a price set by the government for reasons not necessarily related to, and even incompatible with, the securing of the best price? Is the price to be set, for example, at a certain level to keep down the cost of living in Canada or to provide livestock raisers with feed at a reasonable figure? In this latter case if the Wheat Board fixed a price for oats and barley below what they can be sold for, will the resulting loss be left with the producer of oats and barley? Or will this loss be paid by the whole Canadian people? To put this in another way, will it be the policy of the Wheat Board in handling oats and barley to hold down the price to the buyer of them by open or hidden subsidies? If so, who will pay the subsidies, the producer of oats and barley or the federal government representing and taxing the whole body of the Canadian people?"

"At this point may we ask the question, 'What other products of Canada, either primary or secondary, is the government going to fix the price of and leave the burden of carrying the difference between the government price and the market price upon the producers of those products?' If this is a



Commentary

good policy for wheat and pork and beef and poultry products, and now oats and barley, why is it not a good policy for copper, newsprint, fish, tractors and farm implements? This is a question with which we are likely to be confronted in the passage of our complementary legislation."

"Meanwhile we are not putting this legislature in the ridiculous position of purporting to complement legislation which has not been proclaimed and in relation to which no firm commitments have been made by the Dominion Government that it will be proclaimed."

"The Manitoba Government has no intention of asking this legislature at any time to pass legislation dealing with hypothetical situations or to issue blank cheques to any other legislative body. Before we commit Manitoba citizens to a policy we have a right to know what that policy is and we mean to know what it is before we make the commitment."

"Our general position was stated with equal clarity by me yesterday. The Manitoba Government is not opposed to oats and barley being handled by the Wheat Board acting as the agent of the producer under a well-considered, workable plan which properly protects the interests of Manitoba farmers."

In the course of correspondence with Mr. Garson, two interesting statements were made by the Hon. Mr. C. D. Howe. In his letter of March 20 he said:

"We would look to the Canadian Federation of Agriculture to recommend prices for oats and barley satisfactory both to producers and feeders."

In his letter of March 25 he said:

"The next step of this government will be to review the position in early July with the Canadian Federation of Agriculture, in order to determine whether the then existing situation warrants proclamation of Bill 135."

From the foregoing it is evident that the Canadian Federation of Agriculture will be faced with two questions, one whether or not the amendment as indicated by parliament should be proclaimed without further steps to change the Canadian Wheat Board back into an agency for producers instead of an instrument of government policy and whether the Federation is able and willing to take on the task of suggesting domestic prices for oats and barley that would be satisfactory both to the east and west. The Federation is due to hold a meeting in July in Nova Scotia before that time. The executives of western farm organizations represented in the Federation will doubtless study the problem in the light of Mr. Garson's criticisms and decide upon their attitude.

In this connection there may be quoted a resolution which was passed by the Board of Directors of United Grain Growers Limited and forwarded for consideration at the Western Farm Conference and the Canadian Federation of Agriculture meetings last January. It was not then accepted but it undoubtedly expressed an idea which now widely prevails amongst western producers of oats and barley:

"WHEREAS the government has been requested to introduce legislation at the current session of parliament to give to the Canadian Wheat Board the same exclusive powers over the marketing of other grains that it now exercises in connection with wheat;

"RESOLVED that any such legislation should be based on the principle that the Canadian Wheat Board should be an agency operating solely for the benefit, and in the interests of grain producers with a duty at all times to sell grain for the best available price whether in export or domestic markets,

and should not be used as an instrument of government policy to limit domestic prices or subject western agriculture to regimentation."

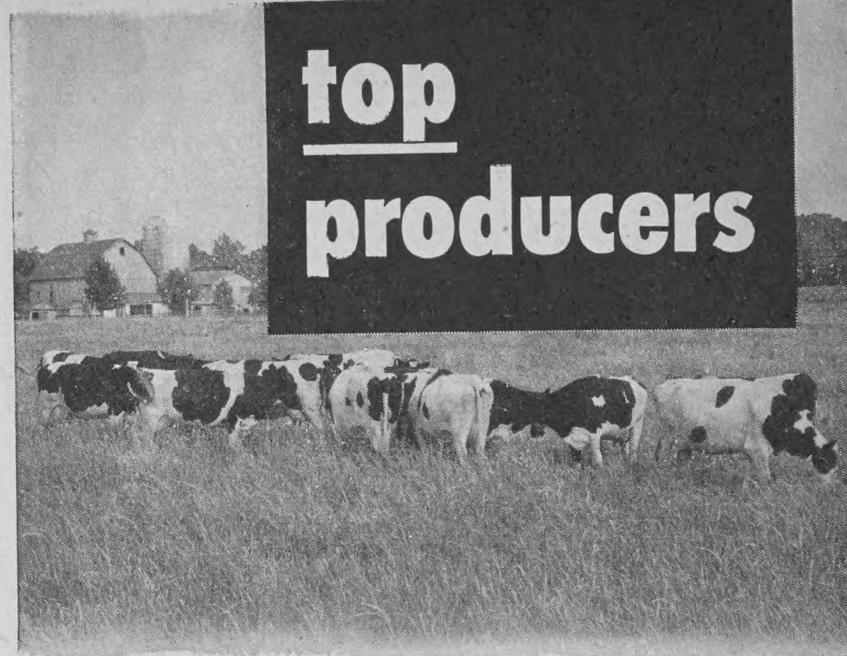
Court Rules Against Canadian Wheat Board

Chief Justice E. K. Williams of the Manitoba Court of King's Bench handed down a judgment last month which, if not reversed by a higher court to which it will presumably be appealed, will be of far reaching importance, and may affect many matters of government policy. The action which had been tried before him affected only some 40,000 bushels of barley which J. P. Nolan of Chicago claimed from Hallet and Carey, a grain firm which had been holding it for his account, while possession of the barley was also claimed by the Canadian Wheat Board in line with orders issued by it in March, 1947, when all oats and barley in commercial positions in Canada had been demanded by the Board for account of the Government of Canada. The owners of some 50 million bushels yielded up their grain at that time, some of them under protest. Mr. Nolan alone contested the legality of the Board's demands, and insisted on retaining his barley. The court decided that he was right, and that the Wheat Board was wrong, and that Order-in-Council 1292, under which the Wheat Board was proceeding, was ultra vires of the Dominion Government.

The seizure of grain on behalf of the Dominion Government took place as of March 17, 1947, when the government decided to increase the ceiling price on oats from 51½ cents per bushel to 65 cents, and on barley from 64¾ cents per bushel to 93 cents. The idea was to prevent "fortuitous profits" from arising to the owners of commercial stocks of these grains, and to do by taking their grain at the former ceiling prices and selling it back to them on the new basis. The annual report of the Canadian Wheat Board just issued shows that the government made a profit on these transactions of just over \$6,500,000. From the government standpoint this offset the extra payment it made of 10 cents per bushel to farmers who had sold barley between August 1, 1946, and March 17, 1947.

The Order-in-Council, portions of which were declared invalid by Chief Justice Williams, had been passed under the Emergency Powers Act, which parliament had passed to continue special powers to the government after the War Measures Act, under which it had operated during the war ceased to be effective. The validity of the Act itself was upheld by the court, although it had been subject to challenge. But it did not, the court said, give the government power to act where an emergency did not actually exist, and there had not been such an emergency in oats and barley. Counsel for the Wheat Board had not attempted to prove that there was any such an emergency, but instead advanced the doctrine, which the court rejected, that it was not open to the court to inquire into that matter.

The decision has its importance in relation to all surrenders of oats and barley which were made to the government as of March 17. It has wider implications as indicating the care which must be taken by the Government of Canada in dealing with grain matters generally, to be sure that steps taken are completely legal. Still wider questions which it opens up are connected with general price controls which widely prevailed for a time under the Emergency Powers Act, and which still continue in respect to certain commodities, and also in connection with rents.



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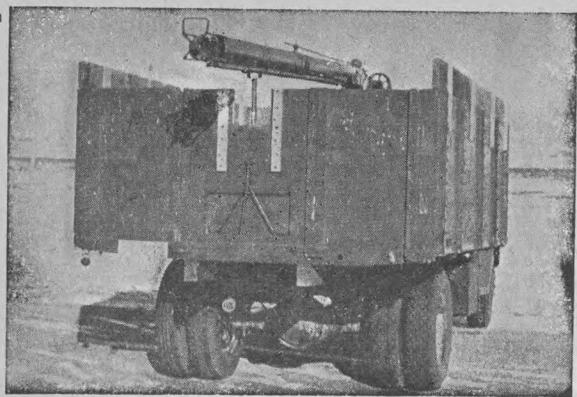
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F.V.2

Gas Storage for Apples

The length of time in which apples can be stored extended by result of recent scientific research

By ALFRED HARRIS

FROM the days of Adam and Eve to the present day the apple has played an important part in the life of man; and according to scientific reports it is going to play an even more important role in the future.

In the past years the greatest drawback connected with the apple was the fact that it was a seasonal fruit, and like all seasonal fruit it could only be kept for a short time after it had been picked—four months at the most, even with the aid of the best refrigeration units available. Thus only enough were grown to fill the demand that arose within the four-month period.

The growers realized that if the four-month storage period could be extended their apples could be sold on a steady year round market instead of just on a hectic seasonal market in which prices soared momentarily, and sank below the profit point the moment the fruit began to soften.

It was because of this seemingly pure commercial problem that scientists in North America went to work on the storage question of the apple. In England, however, the motive was a different one. During the submarine blockade of the 2nd World War the English people saw how dependent they were on the food that came from sources that were outside of the British Isles. This realization spurred them on to find ways by which they could store their own perishable foods indefinitely. The work of the British and the work of the Americans soon grew into a development which promises that the apple will become a steady, constant source of food—and a source of sugar for those that suffer from diabetes.

The perfect state of storage for any living thing is, of course, suspended animation—but this, like perpetual motion, seems to be nothing more than just an idler's dream. However, the state that comes nearest to that of suspended animation is sleep. Thus scientists, in an attempt to find a better method of storing apples, first experimented with the idea of putting apples to sleep by using anaesthetics such as ether and chloroform. Although such a method as this is possible it was found to be unpractical because of the high cost of the sleep producing agents.

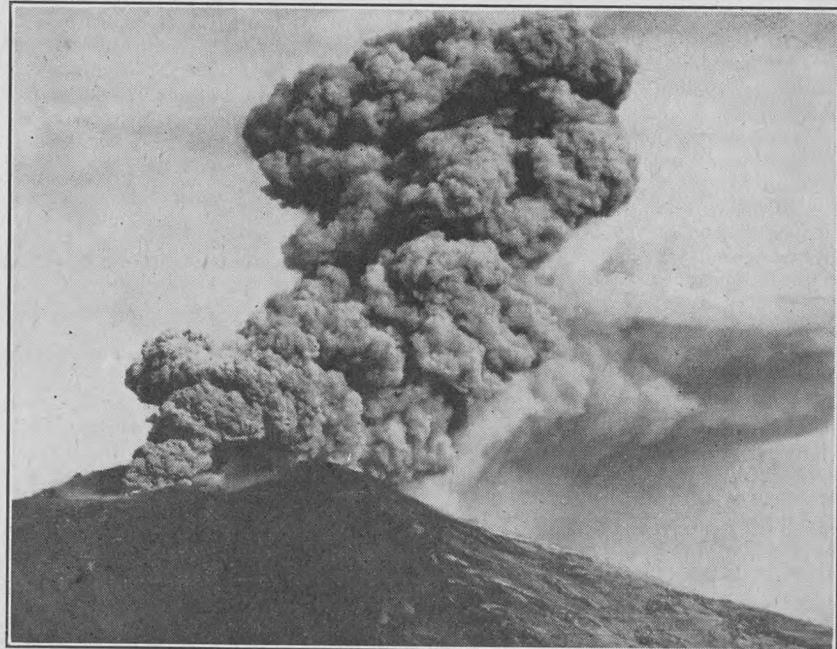
The familiar method of quick freezing was investigated also with an eye towards improvements but it, too, had to be abandoned because an article quick-frozen has to be used as soon as it is defrosted or else it will go bad immediately.

Although both of the above methods were examined closely it remained for Professor Robert Smock of Cornell University to discover the best means of storing apples.

Prof. Smock worked on the idea of putting apples to sleep, and as a result of his brilliant research he found that it is possible to extend the life of an apple by a method in which he used carbon dioxide, a cheap gas, to produce a state in the apples which can be likened to the state a narcotic causes in in a human being—that is, a state of drugged sleep. When Smock combined this method with ordinary refrigeration he found that it was possible to extend the storage life of an apple from four to six, or even seven months.

AS soon as Prof. Smock had proved his system in the laboratory he set about to test it on a large scale. In a short time he had built a large, gas-tight refrigeration vault in which he could easily regulate the concentration of oxygen and carbon dioxide.

When the vault was completed he sealed within it 300 bushels of apples. This was done at the height of the apple season when apples were selling for a price as low as \$2.50 a bushel. Thus the Professor kept his apples all through the season when ordinary store houses were selling their product at very low prices. After the ordinary warehouses were completely empty, or partially filled with unsold, rotting apples Professor Smock had his fresh and juicy in his specially constructed gas and refrigeration chamber. In early April when there wasn't an apple to be found on the market, Smock opened his special storage chamber, removed the delicious apples, and sent them to market. In a short time the 300 bushels had been sold, and the Cornell scientist found himself flooded with orders from fruit dealers all over the country. The apples sold at \$4.50 a bushel—twice as much as they had cost months before.



L. B. Thomson (see page 8) was a passenger in the airplane from which this picture was taken of Mt. Ruapehu, a volcano which erupts intermittently on North Island, New Zealand.

ALTHOUGH THIS METHOD, which has been given the name of "refrigerated gas storage," permits an apple grower to store his fruit for only six months now, scientists are at work to improve it, and in the future growers will undoubtedly be able to store their apples the year round. This tremendous advance will not only allow us to have the apple as a foodstuff every day of the year, but it will allow the apple to be used for many other things than just a table fruit. It may well become an important object of research itself. Any vegetable or fruit which can be had the year round is always an important potential source of raw material for the future.

The apple itself contains ten per cent sugar, and one important development prophesied concerns part of this sugar.

At the engineering experiment station at the University of Colorado scientists have found a method which enables them to extract Fructose (or Levulose as it is sometimes called) from the Jerusalem Artichoke. Fructose is a sugar which is suitable for consumption by those suffering from diabetes. If such a sugar as this could be produced on a large scale it would relieve the suffering of thousands. Although the Jerusalem Artichoke contains only a small percentage of Fructose, the ordinary apple contains as much as five per cent, one-half of its total sugar content.

The scientists at the University of Colorado have already built a small pilot plant and are now endeavoring to extract Fructose on a large scale from Artichokes. All that remains to be done now is to turn their principles toward the apple—a source of Fructose that is, in view of refrigerated gas storage, inexhaustible and constant.

ANOTHER development which refrigerated gas storage will open up is the use of apples for that common dessert—applesauce. Now that chefs, and mother too, can have any type of apple at their disposal any time of the year they will be far more particular in their choice of the apple to make the sauce. Many different types will be tried, and undoubtedly one will be found which will be best for this purpose—the perfect apple for the perfect applesauce.

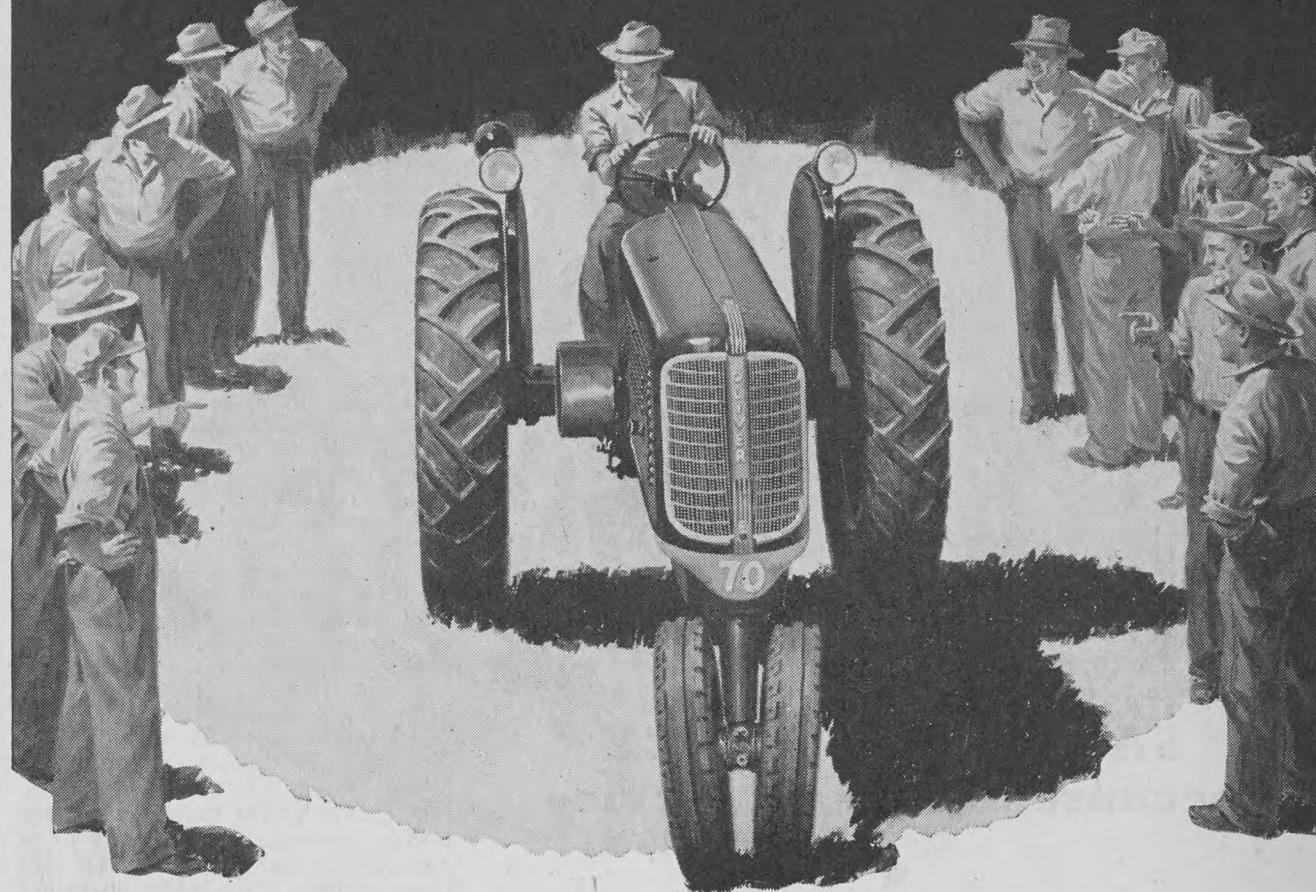
Apple juice too, will undergo a change. In the past it had a very low acid content. To people who are used to citrus fruit juices with their high acid content this was a decided drawback. On the tree the apple contains a fair amount of acid, but once removed the acid content diminishes rapidly. Thus, if an apple is used for its juice as soon as it is picked the resulting drink is pleasant and tangy, but if the apple is placed in ordinary storage for a number of weeks before it is processed the result is a very flat, tasteless drink.

Now, apple juice factories, with the aid of refrigerated gas storage will be able to make delicious apple juice at any time, whether it be within a week of picking time, or a number of months. The fact that the apple juice factories, and all the other factories using the apple as a raw material, will have a source of fresh apples all year round means that work will no longer be seasonal, and that the employees will be assured of a year round job. This in itself is well worth the effort that is going into the refrigerated gas storage problem.

Apple pulp for pies, too, will undergo a change. Many experiments will undoubtedly be conducted to find just which type of apple gives the best, and the most pulp for pie making; and so in the future you'll eat a pie that is perfect in every way.

Yes, the apple has come of age. It is no longer just a fruit to be enjoyed in season when the weather is right. It is now an independent source of supply which in future will grace our tables in various forms all year round.

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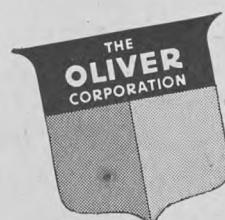
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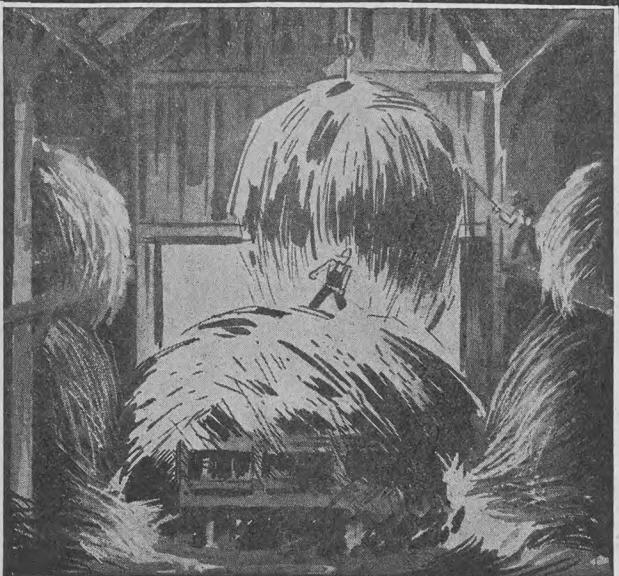
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Care of Storage Batteries

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By V. J. P. GERALD

BATTERIES are used in all our industries, automobiles, trucks, aircraft, and on the high seas.

In other words, the storage battery is, to a large extent, vital to the economics of our country. Because of the importance of batteries, it is only proper that we should know a considerable amount about the maintenance and general care of such.

The average battery set sold to the farmer is sold at a price of \$400 for 16 cells, 32-volt. This set normally carries a five to seven-year guarantee. The guarantee covers quality, material and workmanship and is given on the condition that the proper size of battery is used and that the manufacturer's instructions for proper operation shall be followed. While the farmer is not expected to have engineering knowledge he should be familiar with the general construction of the battery and it is advisable to know a bit about volts, amps., and watts.

The lead sulphuric acid batteries, commonly used for farm lighting, as finished products, are of rather simple construction. They have positive and negative plates with wooden separators between the plates acting as insulators. The whole assembly is immersed into a sulphuric acid and water solution commonly known as electrolyte.

SPECIFIC gravity of the electrolyte is an important factor always to be considered when using batteries. The farm lighting plant battery in a fully charged condition may have a specific gravity of 1.220. This gravity will drop as discharge takes place. In a 2/3 discharged condition the battery will read 1.180, and in a completely discharged condition the battery will read 1.160.

It is not advisable to discharge the battery to its utmost limit and much better results, together with longer life of the battery will be obtained if the discharge is stopped when the hydrometer reading has fallen 2/3 of its range between fully charged and fully discharged.

It is very important that all the cells in the battery should be of equal specific gravity at any time. If some cells are higher or lower in gravity the acid should be adjusted to read exactly the same in all cells when fully charged to whatever figure the manufacturer has recommended for specific gravity in a fully charged condition.

It is important that the battery should be kept filled with distilled water or rain water, collected in a clean manner in glass or lead lined containers. Normally the farm lighting glass jars have a line to which the water level should be adjusted. Once the battery is functioning properly with the specific gravity in each cell reading the same, the user is well advised to mark each jar with a conspicuous line using grease pencil or chalk which indicates the correct level at which the electrolyte should be kept.

Each farm lighting battery set is supplied with one or more pilot cells. These cells should be placed at the ends of the line of batteries in order that the indicator floats therein can easily be observed. It is, however, important to remember that the pilot cell only indicates the condition of charge in the particular cell in which the pilots are installed. Of course, if the other cells are in perfect balance, that is to say, if the specific gravity of all cells read equal when fully charged, the pilot cell can be used as a general indicator for the whole set.

It is, therefore, advisable to make good use of the hydrometer which is

supplied with all sets and particularly check the acid strength in each cell. This should normally be done once a month when the set is given its conditioning or equalizing charge. It is well worthwhile to number each cell in the battery set and keep a record of the gravity readings taken with the hydrometer. This will help any electrician or battery man in solving troubles if anything abnormal should arise during the operation of the set.

In a healthy battery set, bubbles of gas are evolved from the plates when the set is almost fully charged. This is called gassing and it is very important that the operator should carefully watch that all cells gas equally on charge. If, for some reason, one cell is slow in gassing, it is advisable to take this cell out of the circuit during discharge and put it back in the circuit during the charge until the cell gases equally with the other cells. Gases evolved from the battery are explosive. A spark from static electricity accumulated on a person can ignite these gases. Therefore, before adding water or touching the vent plugs, always ground the person by touching the post at the negative end of the battery.

IN addition to the usual charge of the battery set it is essential to give the set an equalizing or conditioning charge once a month. This is done by continuing the ordinary charge for an hour after the specific gravity ceases to rise or when the pilot floats are fully up. During this charge the cells will gas very freely and this will thoroughly agitate the electrolyte and give a good opportunity to record the specific gravity of all cells.

If a cell in the set, for some reason, starts to use an abnormal amount of distilled water, it may be an indication that this cell is short-circuited. The gravity may read low and it is advisable to remove this cell from the circuit and take it to a qualified battery shop for examination. If left in the circuit this cell will be of no use and will result in a lot of charging for nothing and will also interfere with the capacity and normal operation of the set.

All lead sulphuric acid batteries will leave a fine deposit at the bottom of the container and in the course of time this deposit will gradually increase. If the increase of deposit is very rapid it is a certain indication that the battery is not being properly operated and the user is advised to carefully check his operation in an effort to correct it. The deposit will eventually fill the space below the plates at which time the battery should be renewed.

Cleanliness about the farm lighting set is most important as dust deposits on top of batteries, when becoming slightly moist, will cause discharge at a fairly high rate. This will drag the specific gravity down in the odd cell and put it out of balance with the rest of the cells. The hydrometer should be kept very clean on the inside and outside so it can easily be read.

The connectors and terminal ends should be kept clean and covered with vaseline to hold down corrosion. Dirty connections often heat up. This is a sign of resistance; it causes voltage drop and general loss of capacity.

The battery set should be kept in a well ventilated room where the temperature is above freezing during the winter months.

WHEN batteries are not being used they tend to discharge very slowly. Batteries left for long periods of time in a discharged condition become sul-

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On batteries where several truss rods

are used, it is difficult to bulge the assembly but tremendous pressure takes place during over-charging and the consequent heating will tend to compress the sponge lead in the negative plates to a degree where it is no longer as active as it should be. Compressed materials do not allow as free chemical action as is desired during charge and discharge. The battery will consequently not have as good a capacity.

A badly sulphated battery or a battery being continually left in an undercharged condition will take on an odd appearance. The edges of the positive plates will appear somewhat lighter in color compared with other cells. The edges of the separators will appear to be covered with a powder-like substance and great care should be taken to give these batteries several long, slow charges at approximately half the maximum ampere charging rate as specified in the instruction sheet by the manufacturer.

If the battery has not been left too long in a sulphated condition, it will generally react to a long, slow charge driving off the sulphate and again taking on its normal appearance and of course, regaining its normal capacity.

THE majority of battery failures can be attributed to one of several factors or a combination of factors.

First to be considered is over-charging. The battery should be charged at the normal charging rate as indicated in the manufacturer's instructions accompanying every set. If the period of charging is limited, it is permissible to start charging at the maximum rate as shown in the instructions but the rate must be reduced to normal when gassing occurs or if the temperature of the electrolyte rises to over 100 degrees F.

It should be remembered, never to charge the battery set above the normal rate after gassing has started. If the charge is stopped for some reason or other it should be completed at the very first opportunity. It is important to stop charging as soon as the battery has become fully charged except on the monthly equalizing charge.

If batteries are continually allowed to be charged at a high rate for long periods after the specific gravity has reached its maximum, irreparable harm can be done. This is caused by over-charging which will buckle the plates as the active materials in the plates will expand because of over-heating thus tending to spread the assembly. As a precaution against the plates spreading, the manufacturer, when assembling the battery, has built in truss rods which hold the two outside negative plates from spreading. If, however, the battery is over-charged and overheated to such an extent that the assembly bulges despite the truss rods it is an indication of misuse.

The five or seven-year guarantee covering lighting plant batteries is based upon the number of cycles through which the battery goes over a period of time. One charge and a discharge constitutes one cycle.

The farm lighting battery being operated properly will go through such a cycle approximately every five days or 73 times a year, in five years, 365 cycles. The average battery set made by reputable companies contains materials and is of such construction that it will stand well over 500 cycles. Of course if the plant goes through a cycle every other day you can easily see where it can not possibly last the time it is normally expected to. It is, therefore, very important that the proper size of plant be chosen to handle the load.

IN a number of instances battery failures can be attributed to insufficient charging. This simply means that the operator does not bother to bring the battery up to its full charge. It will result in the plates becoming hardened by sulphation. If hardened plates are subjected to high rates of charge during the period when the battery is being heavily used, after long periods of undercharging, it will tend to drive off the sulphate in crystal form and it may even result in loss of large chunks of active material in the outside negatives which will leave the plate grid bare. A bare outside negative grid plate may not necessarily mean that the battery is ruined but it is an indication of faulty operation.

Every year a number of batteries become doped. Users should be on guard against anyone selling them "rejuvenators" or patent electrolytes. Only a mixture of sulphuric acid and distilled water can be safely used in lead acid batteries and all other substitutes will do irreparable damage.

Care should also be taken that the engine unit which operates the generator is installed well away from the battery set in such a manner that the battery rack does not vibrate in the least when the engine is running, as continual shaking will, of course, give rise to continual loss of active material which will settle in the bottom of glass jars as sediment.

The five or seven-year guarantee covering lighting plant batteries is based upon the number of cycles through which the battery goes over a period of time. One charge and a discharge constitutes one cycle.

The farm lighting battery being operated properly will go through such a cycle approximately every five days or 73 times a year, in five years, 365 cycles. The average battery set made by reputable companies contains materials and is of such construction that it will stand well over 500 cycles. Of course if the plant goes through a cycle every other day you can easily see where it can not possibly last the time it is normally expected to. It is, therefore, very important that the proper size of plant be chosen to handle the load.

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At the Perth Show and Sale, Scotland. Left to right: Mrs. Yule; The Lord Lovat, steward; J. Chas. Yule, Calgary, judge, and Mrs. Gertrude McHardy, secretary of the Scottish Shorthorn Breeders' Association.

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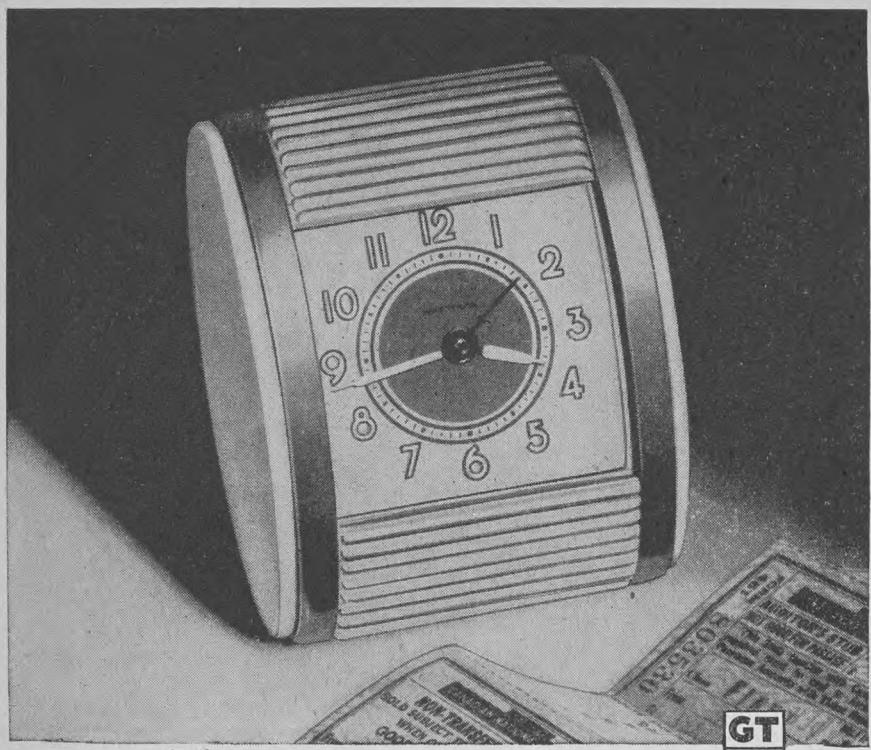


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THE LIFE OF THE SURFACE

Parksville Field Dog Trials

Sporting dogs go through their paces on "the island"

By H. E. DAHL

SPORTSMEN from all along the west coast have been enthusiastic participants or spectators of the field dog trials at Parksville, Vancouver Island.

These international trials are sponsored by the Parksville Field and Game Association. On April 10 and 11 they held their third annual trials.

Fifteen keen retrievers lined up to be examined by the vet, and to be photographed by the press. Ten happy Labradors, four exuberant Golden Retrievers, and a gay Irish Water Spaniel, were ready to compete for the honors in the day's event, the Shooting Dog Stake.

The Shooting Dog Stake consisted of a land and water marking test. Spectators were given an added thrill when four dogs whose fine performance demanded it, were called back by the judges to compete on a "blind" bird test.

The trials were run on the flats beyond the beach. This was ideal terrain to challenge an eager retriever. Where the land trials took place, the land was covered with tall, matted grass, and pitted with deep mud holes. An inlet of sea, with a swift current bounded by a steep, rocky bank and a sloping beach, was the locale for the water trials.

The marking test begins with a brace of dogs and their handlers taking their positions facing the land or water. Each dog is at "sit" position at the right of his handler. Behind them, a judge signals, in turn, to a "shooter" and a "thrower," placed at the right and left ends of the far land or water area. The competing dog, thus sees two birds "shot." He marks each bird as it falls, and awaits the signal of his handler to direct him to the bird he should retrieve.

The dogs are judged on these points: marking, signals, control, style, perseverance, nose, mouth and delivery, general performance, and special merits.

During the marking test, the dog is on his own. The handler should give only the three necessary signals for "go," "return," and "deliver." A dog may be signalled back to where he can pick up the scent; he may lay a bird down to get the correct hold. Should a dog "break," that is start to retrieve without a signal, or bring back a decoy, he is eliminated.

THE "blind" bird test is run on land or water. For this the handler must have perfect control of his dog, so that he may direct him to where the dog can pick up the scent of the hidden bird and retrieve it.

Spectators are greatly interested in this test. They forget the rules they should follow when they watch the re-

triever as he speeds off at the first command, takes the first move in the right course for the hidden bird, catches the scent, races joyously to retrieve, and returns triumphantly.

For there are rules, courtesy rules, for the observer. He should not applaud until the competing dog completes his trials. If the second of a brace of dogs is awaiting his turn, the applause must be subdued. He should not make any noise or movement which might distract a working dog and his handler.

Some very good work in the first day's event tested the manners of the appreciative onlookers. The winner, Vic's Winsome Teacup, thrilled the crowd with his fine marking, and his smart general performance.

Euclid Goldie amazed the throng with her speedy retrieve in the "blind" bird test; she accomplished this in one minute.

Dusty Day was outstanding for his perseverance, and response to handling.

Winsome Gilda is a small, golden with personality. She proved her exceptional response to handling by rising up on her hind feet to make certain she would see her handler and get her signal. In the water trials, she was the first of a brace of dogs to compete. Immediately after her plunge into the water, she was joined by an overly-eager Labrador, who entered that trial without a signal. He may have had a guilty conscience, but that didn't keep him from trying to retrieve Gilda's bird. Despite this, unexpected opposition, Gilda retrieved both birds successfully.

The crowd was thrilled by this, and very amused too. Several other incidents relaxed the tense atmosphere that hung over the scene. There was the young dog who returned proudly with an enormous decoy. She made a right smart delivery, and the spectators loved it.

A NOTHER laughter provoking occurrence was caused by a golden. He had fought that current and raced yards before he scented the bird. He retrieved his bird and was on the way back. Suddenly he sat down, right in the water. He stared up at the gallery and communicated this message to his handler, "Just give me a minute, Boss, before I tackle that darn current."

On the following day, the elite of the retriever class was there for the Open All Stake. Thirteen of the finest retrievers started in this event; three were withdrawn by their owners before the water trials.

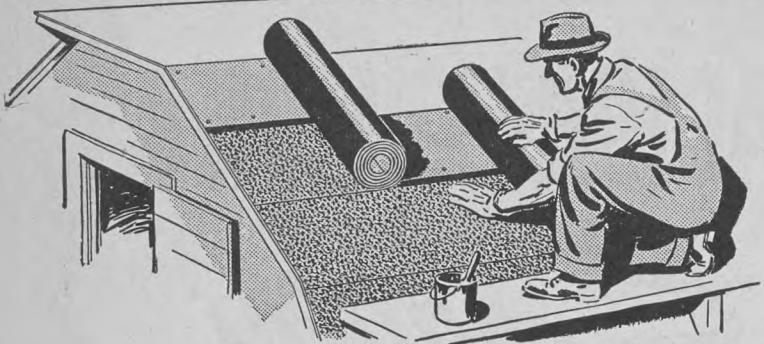
The second day's event was to be a battle royal for these courageous dogs. Added to the land and water marking test was a "blind" bird test. This was the "Day" of the trials, and consequently there was a larger attendance.

(Turn to page 95)



Bracken's Dynamite returning after a successful retrieve to his owner, Keith Coughlin.

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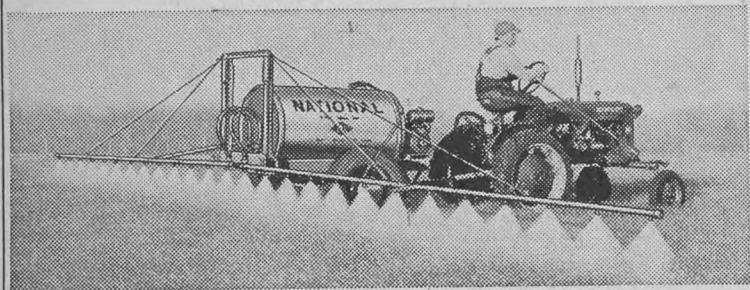
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A Plant Breeder Visits Sweden

F. L. Skinner, attracted to Sweden by the work done in breeding hardy and quick maturing trees, tells of his observations

WHEN I was in Europe last summer I decided that I must pay a visit to Sweden for the purpose of seeing the work in tree breeding that was being done there and to make arrangements, if possible, to secure such plant material as was likely to be of value to us in western Canada.

The mountains that run down the centre of the Scandinavian peninsula protect the northern half of Sweden from the effects of the Gulf Stream and for that reason the northern portion of the country has a much colder and drier climate than most of western Europe.

Scots Pine from northern Sweden has proved fully hardy at Dropmore and during my long correspondence with the University Botanic Garden at Uppsala I have received, in exchange, seeds of many trees and other plants that have proved much hardier than the same kinds secured through the ordinary commercial sources. The Swedish form of the small leaved European Basswood has proved hardy at both Dropmore and Morden and the fine young trees of the European Elm growing behind Mr. Leslie's house at Morden originally came to me as seed from Uppsala. This knowledge convinced me that much more could be learned by a visit.

There are some quite old districts in Stockholm with very narrow streets but much of it is quite modern with wide streets and a good street car service. Much of the town is built on islands and there is a great deal of travel and traffic by water.

I HAD read of the fine apartment blocks for workmen that had been built in Stockholm and was much interested in seeing them. They are fine looking structures usually five or six stories high and apparently fully modern. These buildings are built in squares, with a park like space between each row of apartments, and about as much open ground between each apartment block as the block itself covers thus giving ample playing space to the children of the occupants without them having to use the streets as playgrounds.

Saturday and Monday I spent at the Botanic Garden and there saw many interesting plants. The rose we know in Canada as the Banshee was being grown under the name of Rosa amoena grandiflora and as I saw it at other places in Sweden it is more than likely it was brought to Canada by Swedish settlers. I did not see this rose in Britain at all.

The shrub that goes under the name of Siberian Dogwood in Canada is much like our native Dogwood and not nearly so attractive as the blue berried, glossy leaved shrub that bore that name at Stockholm. Here also, I saw a large flowered form of Clematis viticella with blood red flowers; as I have a hardy blue form of Clematis viticella there is a fair chance that the red form will be hardy; it will certainly be valuable for plant breeding.

Two herbaceous plants growing here that I found rather striking, were a six-foot thistle-like plant from Siberia with bright, yellow flowers and Anemone tomentosa; this anemone was in bloom at the time of my visit and is closely related to the Japanese Anemone; as its range in its native China is much farther north than the Japanese Anemone it stands a good chance of being hardy with us.

Behind the administration building at the Botanic Garden there is a high, rocky mound that has been made into a rock garden. Standing on the top of this rock garden one can look over the roof

of the administration building and see the large building that houses the Natural History Museum. Here the well known Swedish botanist, Dr. Eric Hultom is employed. Dr. Hultom has travelled widely in Kamtschatka and Alaska and has written Floras of these two places in English. In his Flora of Kamtschatka he tells of a poplar and a willow that grow so large that the natives make their dugout canoes from single trunks. So far I have been unable to secure these two trees from the U.S.S.R.

SWEDISH botanists have sent their home institutions seeds of many uncommon plants from Siberia and eastern Asia and I saw specimens of many interesting plants in Sweden that I had not seen anywhere in Britain.

From Stockholm I went by air to Malmo in southern Sweden and took the train from there to Ekebo where the Swedish government have a tree breeding station. Ekebo is only a few miles from the famous grain breeding station of Svalof. The air trip from Stockholm to Malmo takes one over a wide plain well watered with lakes and with low, tree-clad hills. Here there is apparently no waste land and the cattle are tethered at the edge of the fields of forage crops so that they may eat their fill without being able to waste any.

During recent years Sweden has been cutting her timber faster than the natural annual increment and is now faced with the problem of either cutting less timber or replanting with faster growing varieties of trees. The production of fast growing strains of hybrid trees was therefore one of the tasks given to the tree breeding station. I was most interested in their work with larches and poplars as I have been working with these two families of trees myself. The European Aspen poplar had been crossed with the American Aspen and some of the young hybrid trees had been growing from five to ten feet in one year. With larches they had been crossing the Japanese with the Siberian variety and one three-year-old hybrid between these two had made five feet of growth last year up to the time I measured it.

The erect form of the European Aspen was used quite a bit at this station; it is much narrower in outline than the Lombardy poplar and as it is said to be hardy throughout Sweden it will probably prove hardy with us.

Here too, I saw a good illustration of the necessity of choosing suitable geographical strains of native trees for reforestation purposes. Side by side were two rows of Scots pine both the same age and given the same care; the one row grown from seed collected locally were about nine feet high while those grown from seed collected in northern Sweden were only from two to three feet high. Still this northern form will grow nine feet high with us during the same time.

Here also experimental work is being done in the chemical treatment of soft woods with a view of hardening them and preventing shrinkage. Floors of six-inch boards of these treated soft woods were apparently standing up well and showed no sign of shrinkage.

Returning to Stockholm by air I took the train to Uppsala which is about 60 miles north. As one goes north from Stockholm the country becomes more like some parts of northern Ontario; the fields are smaller and interspersed with low, rocky ridges mostly clad with spruce and aspen and here cattle are to be seen at large in fenced pastures. Around the edge of these rocky wood lands the Swedish juniper is fairly common. This is a narrow upright type

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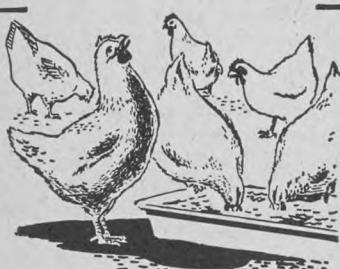
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that is as neat looking as if it had been sheared; one specimen I saw from the train must have been 15 and 20 feet high. Possibly seedlings of this juniper would be hardy if secured from near their northern limit.

UPPSALA is an old historic town and Linnaeus, the father of modern botany worked at the University Botanic Garden there. I spent a short time at the Botanic Garden and then got in touch with Dr. Gote Trepesson of the Royal College of Agriculture who kindly showed me over the botanic garden part of his institution. Much attention has been paid to forage crops here and I was informed that the chromosomes of all varieties of clover grown had been doubled. Judging from the soil and vegetation I would say that this station has many of the same problems as the Dominion Experimental Station at Prince George in British Columbia.

The winter of 1946-1947 had been very severe in this part of Sweden and many of the trees and shrubs had suffered in consequence. One row of poplars grown from seed collected in the coldest part of the State of Washington (it gets down to -20 there) showed much variation in hardiness; some were killed outright, others uninjured. A row of blue fruited Elder had only one specimen that was uninjured; most had killed back badly and some of them had killed outright.

The English oak and Norway maple are said to find their northern limit in Sweden about 20 miles north of Uppsala and judging from the way in which these two trees had ripened up their growth at the time of my visit I came to the conclusion that they might prove hardy in some parts of western Canada if grown from seed secured from their northern limits in Sweden.

Owing to the influx of visitors from Britain and the Continent hotel accommodation was rather hard to secure in Sweden last summer. Clothing was quite expensive, just about double what it is in Canada; still people from Britain were buying at higher prices than they would have had to pay at home simply to save coupons on rationed goods.

**HE WOULD DO IT ALL
OVER AGAIN**

Continued from page 16

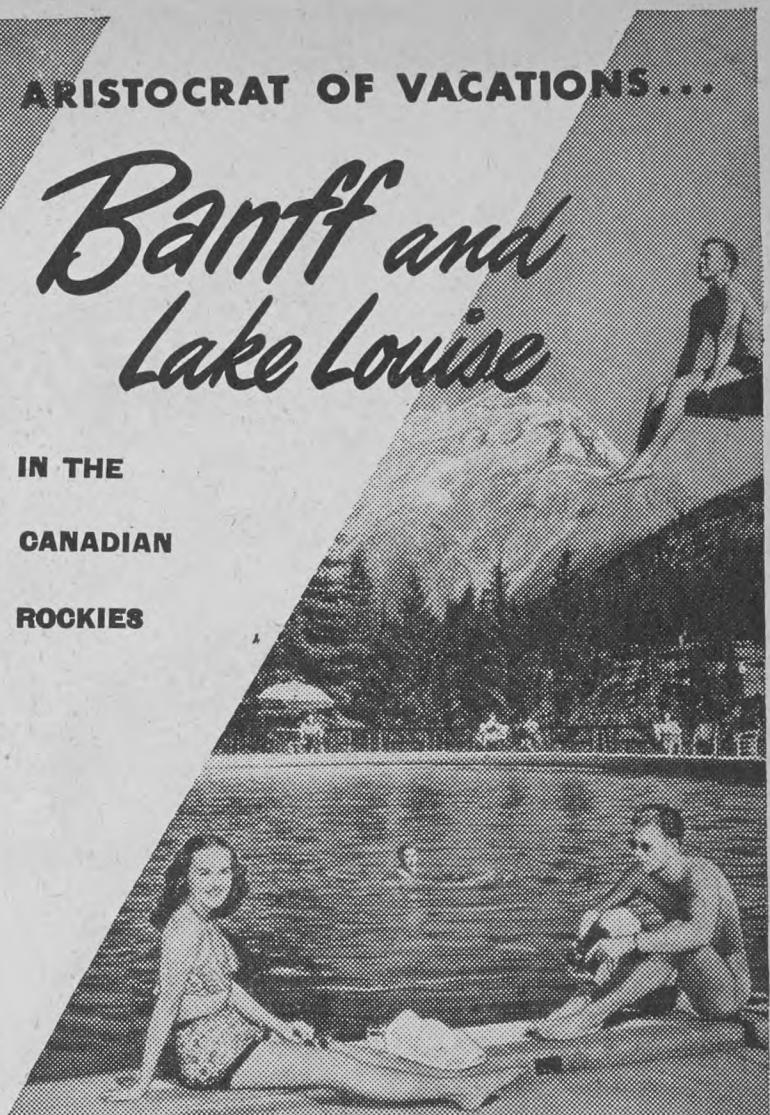
No great emphasis is placed on livestock. Cattle only number about 12 head, including three milk cows. There are two brood sows and litters, about 100 chickens, but no sheep or turkeys. The latter are ruled out because of the fact that the seed grain plots are too near the buildings.

Mr. Rugg takes great pride in his trees around the farmstead. These were planted from 1912 to 1915. Evergreens were planted last. Mostly, fruits have been planted since the shelterbelts were completed, and to the east of the house there is also a large and attractive farm garden. Inside the house, electricity is provided for lighting and for a washer, iron and vacuum cleaner, from an 800-watt, 32-volt Delco plant, which also lights the yard, the barn and the granary.

On this farm, as on many others each year, the problem of adjusting management and farm work was imminent. With one of the two sons at home married, and the other likely to lose his liberty before long, the problem of working out a satisfactory arrangement between father and sons was sitting on the doorstep. No doubt it would be settled satisfactorily to all concerned, by one or more of the traditional methods followed on other farms in similar circumstances.

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FIDDLERS' FAREWELL

Continued from page 9

through, and our bodies seemed to absorb it like dry ground does rain.

It went something like *Cling-clang-clong-cloong*, and seemed to roll and plunder around through the gloomy rooms and crawl up the walls and upstairs, feeling for windows and openings to crawl out at and catch on the night wind and join the music of the pine trees on Sourwood Mountain where the November wind was drawing its bow across the pine needles, and stirring the restless wine-colored sourwood leaves.

HE went into a spasm of coughing and choked, and started having chills till his teeth rattled, and we got him upstairs in bed, and sent for the doctor.

I remember watching the doctor lift him up and listen to his heart and lungs and when he'd finished he called Mother out into the hall, and we children followed and huddled around her and the doctor, and the doctor said, "You folks have a pneumonia patient on your hands—most likely a funeral. The old gentleman will have to put up a fight if he comes through."

He left some medicine, and told Mother to keep him plastered with mustard, and he'd come back, and I remember how us children pitched in to help Mother give him the medicine and make the mustard plasters, and fetch him water.

"Before I get too low," he told Mother, "bring me my coat."

She did, and he found some money he'd sewed in it, and gave it to Mother to pay the doctor with.

He got worse and worse, and looked like he was gone. I recollect him calling Mother close, when he couldn't speak only in little whispers, and said, "If you see me sinkin' get it . . . get the fiddle and pluck a string at my ear . . . let me go away with the sound I love . . . and . . . maybe I'll always have it in the hereafter . . ."

And for the next eight days, it was many a time Mother plucked the fiddle string over the old man's head, and she argued she could always see life flicker in his old eyes when she did.

The night he got the worst, we children were afraid to go to bed because of what we could see in Mother's face. She said it was the crisis. Along about four o'clock in the morning when it is the darkest, and just before the first morning birds begin to twitter, he went into a deep slumber after we'd given him his medicine.

I remember how Mother held the light over his face and bent over the old man and listened.

"It's too sound for sleep," she said, and her face got a little twisted, and she looked a little helpless.

"I'm—I'm afraid it's too deep for sleep; it ain't natural sleep. . . ."

I guessed then he was going there—to the place he called Fiddlers' Farewell on top of Sourwood Mountain—and I almost wanted to go with him.

But he roused again, and there was a tiny spark left in his friendly old eyes, and seemed like he was trying to talk, even with his eyes that seemed to have the only spark of life that was left in his body.

THEN he showed surprising strength. He was able to whisper again, and we bent low and listened.

"I saw it," he said, and seemed like we could see the same kind of light in his eyes like we'd seen when he first stepped into our house in the lamp light.

Mother was always the worst person you ever saw to want to catch the last words of anybody. It was her way of telling if they were saved or wasn't,

and she always said a person's last words mustn't ever be forgot.

She motioned us children to keep quiet, and she bent low and said, "What was it you saw, Mr. Fluty?"

"The glory," he said, "the . . . the glory of the heavens. . . ."

Mother straightened up and looked puzzled, and helpless and hopeless, and didn't seem to know what to say to him, but she turned to us children and whispered:

"He's been in the unknown world; he's been beyond the river in the sweet forever like they sing about down at the church."

He lapsed back to unconsciousness again, and we just had to sit there and wait to see if he'd come out again, and he did. Next morning he was a lot better, and he could talk a little and you could tell he was breathing better.

"Now then," Mother said. "I believe he's able to tell us what he saw in the land beyond the river."

She slipped up to his bedside and said, "Mr. Fluty, what was it you saw last night that you said was the glory of the heavens?"

"Fiddlers," said the old man. "I was in Fiddlers' Farewell, on top of Sourwood Mountain where the wind plays the pine needles. . . . There was a gathering together there . . . of fiddlers . . . of the great fiddlers. Wish you could 'a' been with me and heard 'em play."

MUCH as I liked the old earth and not caring much about the hereafter, I had a feeling that I would have liked to be with him and heard the fiddles and then come back home.

"What tunes was they playin'?" Mother asked.

"Fetch it," said the old man, "and if I've got strength enough left, I'll show you how they played."

We didn't think he could. He was still weak, and tiny pinhead drops of sweat stood on his brow around the edge of his long hair.

Mother said, "That's either death daw or else his fever has broke."

Mother brought the fiddle from where she had it hung high on the wall where we children couldn't reach it. At the head of the stairs, she got us all together, and told us to be quiet and listen.

"It'll be something real pretty," she said, "he'll play something about the sweet bye and bye, in the land beyond the river . . ."

WE propped him up on pillows, and gave him the fiddle, and got it under his chin, and the bow in his right hand, and he touched the strings, and he seemed so weak that it was almost the fiddle playing him instead of him the fiddle. He turned a couple of screws, touched the strings again, and you could see the sparks of life dance again in his old eyes, when he cut loose on:

*Gimme the hook and gimme the line,
Gimme the gal they called Caroline. . . .*

It got Mother. She was expecting soul music, and it was foot music. Before she knew it she was patting one foot right by the old fiddler's sick bed, but when we noticed her, she quit right quick.

It turned out the sweat drops had meant the breaking of the fever, and in a few days he was downstairs again in front of the log fire with us all.

By now we adored the old man and his fiddle, and the gloom had gone out of the house, and the sun was shining, and we children had learnt to pat our feet and sing and keep time with the fiddle tunes.

Then he taught us to dance, and he could tell we were happier than when he came in, and he'd say, "Hit it . . . that's it . . . hit it," and he'd play the little jumpy fast tunes that made our feet shuffle, and didn't seem like he'd ever give the hereafter any more thought.

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But Mother did. She kept wondering about what it was he saw, and about the place he called Fiddlers' Farewell, and one day he told her.

"It's a mighty pretty place," he said, "a level place on top of Sourwood Mountain. The fiddlers picked it out 'cause of the wind playin' all the time in the pine trees, and seems like it just picks up the old fiddlers' last tunes and keeps 'em playin' on and on forever . . . and, naturally, any fiddler would like that, and not havin' to lay forever in the grave with no sounds like a person likes to hear. Why, it'd drive a person stark mad—"

Mother said, "What kind of coffins do they use?"

"Curly walnut," he said. "The man that owns the land on top of the mountain, he makes coffins and keeps 'em on hand for us old fiddlers when we've played our last tune. Mine—it's done been measured up. Some fiddlers like 'em wide at the elbows so if they was to take a notion to play in the hereafter, they'd have room to work their elbows. You see, we fiddlers have our fiddles buried with us, under our chins, and the bow in our hands, and, naturally, a person wants elbow room when he's got the fiddle and the bow."

"I—I'd sure like to be at a fiddler's funeral on Sourwood Mountain," Mother said, clear outdone by the way he was talking about things eternal and in the heavens.

"Anybody would," said the old man; "that is, anybody that don't want no lonesomeness around, and no sadness, but only tunes that makes a person's foot want to cut capers, and tickle your funny bones."

He picked up the old fiddle with the varnish wore off where it went under his chin, and the varnish wore off the neck, and he looked at it, and he said:

"It's . . . it's played many a tune . . . all over the country . . . clear from Maine to California . . . it's made what livin' I've had . . . a livin' for a ramblin', restless man; but, I must say, a happy man . . . happy, like the crickets and the grasshoppers, and they sing all summer, and then quit, but you ain't ever heard one's last song."

BUT still," he continued, "a man even a fiddler, like a cricket, has to play his last tune some time, and I had a feeling like that come over me out in Missouri a couple of months ago, and the feeling said I was gettin' old; in fact, it just come right out and said, 'Hop Fluty, some of these days you gonna play your last tune.'

"I got to thinking maybe I might, and the feeling said I'd better be makin' tracks in the direction of Sourwood Mountain, and I did, and then this storm hit me and drove me in."

He quit talking to Mother and looked around with beaming eyes at us children. We stood there with one foot resting on the calf of the other leg, just listening, and watching his eyes, and he could tell what we wanted, and he picked up the fiddle and cut loose on:

*Chicken in de bread tray,
Pickin' up de dough
Granny, will your dog bite?
No, chile, no.*

We just couldn't keep our feet still. It

went clear through our bones. Seemed like the old man himself was a child and one of us, and wanted to be like us and play with us, and even the baby got so it had just as soon play with the old man as the pup.

But the sunshine had come on the outside, and the gloom had cleared away from the mountains

I REMEMBER that pretty morning when the old man went out and stood on the front porch and watched the sunbeams come leaping and laughing and dancing over valley and hills. The road was dry and dusty and you could tell it was calling to the old man's feet.

He turned back into the house, and said to Mother: "I ain't got no money left to pay you; I ain't ever paid no-how with money for staying at peoples' houses. . . . I've just tried to put up with people that needed a little cheer and a little sunshine more than money. . . ."

Mother stopped him there, and said he didn't owe us a thing in the world, and for him to stay as long as he wanted to, and how glad we all were he came. . . .

But he wouldn't listen any longer. He got the fiddle and played:

Oh, dem golden slippers, Oh, . . .

and it got mighty close to our hearts, for we could tell he was fixin' to leave. He got his little brown coat, and pinned the red bandana handkerchief around his neck and we stood and watched.

Then he got his dilapidated old brown hat.

HE didn't say goodbye like other people did, or make any to-do much about going, but just stood and looked down at each one of us children, and he talked to us with his eyes like he did the night he came in out of the storm.

To Mother he said, "The children—wish I could take 'em, and keep 'em, and keep their feet a-dancin', and their hearts merry, and so full of tunes they wouldn't ever be any room for sorrow. But I reckon a person can't. I—I guess I'll be makin' tracks down the road. . . ."

We stood on the porch and watched till the little brown coat had disappeared around the bend in the dusty road, feeling a ringing in our ears, and wondering if gloom would ever come back and we would have nothing to do in the house.

And then we did hear a sound. It came from far down the road. We guessed maybe he was just moseying along the road in the sunshine and playing sort of for himself like grasshoppers and crickets do, but we could hear it:

*I see my gal a-comin',
How do you reckon I know?
I know her by the pretty little dress,
I've seen her wear before. . . .*

Mother said, after the tune had died away, "Now I know. I know what this house needs. It needs a fiddle. We'll buy us a fiddle this day, 'cause—'cause I'd sooner be a cricket and sing than be a queen in the gloom. . . ."

Which is why you hear fiddles and banjos and guitars ring in the nighttime when you pass by our house, and we keep happy all the day.

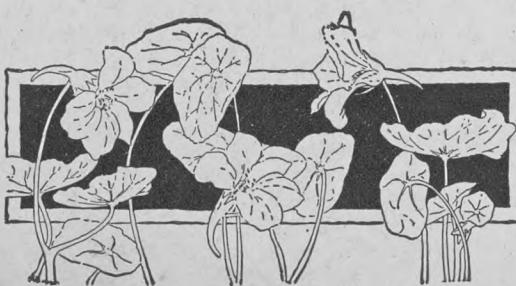


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Continued from page 15

will do or how long it will take him to do it. But he won't be here for a while, I suppose. If he does come—well, he may simply blunder into the clearing and—

His voice stopped.

"You'll have only starlight to shoot by," said the smaller man.

"There are handfuls of buckshot in those shotguns," said Christian. "We won't miss. This time of all times, we won't miss."

THEY retired toward the base of the big rock. From the darkness there, unseen, the voice of Alec Gary spoke. There was the hard, smacking sound of a blow and a snarling answer. Gary spoke no more. One of the dogs whimpered, as though in sympathy. Then the forest settled back into silence.

It was only silence close at hand. In the distance there was still the muttering and the rumbling of the thunder, from time to time.

Silver remained on one knee. If ever he had been close to praying, he was close now; and if ever temptation had taken him by the throat, it had been when the dark form of Barry Christian loomed so close through the night. One flick of Silver's thumb over the hammer of his revolver, and Barry Christian would have gone, at last, to his final account. It seemed to Jim Silver, as he kneeled there, that there was a perverse deity controlling him, bringing him so often close to the great criminal, and so often letting Christian slip away from him again.

He had lodged Christian in prison, to await the death penalty; and Christian had managed to escape almost on the last day. He had seen Christian hurled into a flooded river that ran like a galloping horse toward a cataract. But chance and the unlucky hands of another man had drawn Christian out of the danger that time. And now, as Silver kneeled in the dark, he knew that at last he could bring the trail to an end and kill his man. It was the thing for which he had waited. It was an incredible good fortune that had brought Christian into his hand. He would speak one word—and then the bullet would strike.

But the thought of young Alec Gary held Silver back. Gary was somewhere near. Gary and a she-wolf were baits for him and for the great wolf, Frosty.

THAT thought was still working in his mind, holding his hand, as Christian moved away through the darkness. And then, after Gary had spoken and had been silenced, and after the dog had whimpered and silence fallen yet again, Silver was aware that something lived beside him. There had been no sound of the approach, but something was there—something formidable big and dangerous.

Gradually he turned his head and saw, hardly two steps away, the dim loom of the figure of a wolf.

Perhaps it was because Silver was on one knee, but it seemed to him at the first glance that the creature had the outline of a wolf but the bulk of a bear. A shock of fear struck Silver.

Then he realized that it was Frosty.

He had come through the darkness to the edge of the clearing. Would he venture out across ground that was doubtless sewed thick with traps?

The big fellow drifted a little forward, crouched on his belly, stretched out a shadowy paw, and then drew it back. He moved to the side, and then the wind seemed to come to him from the man so close.

There was an instant of pause. Frosty

bristled to his full height. The green glare of his eyes burned into the soul of Silver. And then he was gone. For all the speed of that withdrawal, still there had not been a sound.

Was that not another of the ironies which chance was heaping upon the head of Jim Silver on this night? The wolf had been there beside him. He had even been able to make out the glimmer of the steel links of the collar that was around his neck. And yet Silver had not dared to shoot.

He had not dared because of Alec Gary. The young fellow seemed to be hung like a leaden weight around his neck.

But what could be done?

To cross the clearing was impossible because of the traps. It was impossible because of the shotguns, also. For Barry Christian would not miss. Even Silver himself was hardly a hairbreadth more accurate with weapons than Christian—and on this night Christian would be shooting for the prize of all his life.

How to come at the prisoner at the base of the rock, then?

It was typical of Christian that he should have had wit enough to secure his man at a point which was so perfectly open, and which was nevertheless so unapproachable.

Suppose that Silver tried to skirt around through the woods and come at the others?

Well, there would be traps through the woods, too—on the verge of them, at least. And if a wolf trap closed on his foot it would be a bad business—the last business for Jim Silver in this world.

He gritted his teeth and waited for a thought. None came.

HE withdrew through the trees to Parade and saw the pale glimmer of the great eyes of the horse. Parade stood with high head, turning it a little from side to side, his ears stiffly forward as he listened and scented a hundred dangers. His fear was so great that he



had broken into a fine sweat, but still he waited at his post for his master. And a great outrush of admiration for the dumb brute poured from the heart of Silver. What is so admirable as those who can endure even when they cannot understand?

As he stroked the horse, his hand touched the rope which was coiled and tied to the front of the saddle. With it came his first hope of making the delivery of Alec Gary.

It was only a vague hope, for the scheme seemed so ridiculous that he smiled and shook his head in the darkness. He gripped his hands hard, also, and flexed the big muscles of his arms.

He was stronger, far stronger than other men, and yet he could not help doubting the sufficiency of his might for the task which he contemplated.

He took Parade back through the woods, circled them at a distance, and as the wind blew from him toward the clearing, he heard the dogs of the pack break out into one of their sudden clamors. He continued in the wide sweep of the semicircle, quitted Parade in the trees up the slope, and at last came slowly forward, carrying the rope which he had taken from the saddle.

He had laid his course, through the darkness of the night and the trees, with such accuracy that he came out just above the lip of the rock at the foot of which the men of the camp were posted.

The night was dimmer than ever. It seemed that the storm which had been roaring in the north and west was now breaking out of the higher mountains and approaching this section. Gusts of wind moaned distantly through the trees or sounded close at hand with sudden rushings. Big clouds, also, were poured in broken streams across the sky, so that the stars were blotted out in great parts of the heavens. But in intervals of the noise of the coming storm, Silver stretched out at full length on the ground, staring down from the ledge, could hear and vaguely see the men below.

WHAT Silver made out, at last, was one figure continually in place at the bottom of the rock. That he took to be his friend, particularly since the silhouette never moved, and therefore was probably bound hand and foot. There were three others who changed places from time to time. Sometimes one of them would move away into the woods on one side, and sometimes one would pass into the other trees. He heard the name "Thurston" used, which served to identify the smaller man of the trio. The others would be Christian and Gregor, of course.

As his eyes grew more used to the broken starlight, he could make out the details more clearly. Above all, he could see the double-barreled shotguns whose big charges of buckshot could be sent home without much light to aim by. Sometimes all three of the men on watch were pooled together for a few moments, and on those occasions there was most of the talk that he was able to hear. The voices were kept low, but the face of the rock was hollowed and curved in such a way that it gathered the noises like a sounding board.

At one of those times, Silver heard Thurston say: "This may be a rotten business. People are going to ask a lot of questions if Jim Silver disappears. The other one, here—I don't suppose that he'll count so much."

"People won't have any questions to ask. Not for years," said Christian. "No one is likely to show up in this neck of the woods for a long time. We're pretty far back in the tall timber, you know. The main thing is to realize that Silver often disappears for months at a time. Everyone realizes that."

"What does he do when he disappears?" asked Thurston.

"Nobody knows. Some people say that he has a mine staked out somewhere, and when he runs out of funds, he goes back to the place and grinds up more ore in his coffee mill and washes out some more dust," said Christian.

"What does he need money for, when he lives worse than a wild Indian most of the time?" asked Thurston.

"He needs it to throw away," said Christian. "The fool can't keep money in his pocket. Any fellow with half a brain about him can wheedle every penny out of the hand of Jim Silver. But I don't think he spends his lost time at any mine."

"Why not?"

"Because it would be beneath him. That's one of his poses. Pretends to despise gold and everything that it will do. He probably just goes out into the woods and gets close to nature."

"How close?"

"Well, he can whistle like any bird you can name; he can chatter like a squirrel and hoot like an owl and growl like a bear. He knows the look of every tree and blade of grass. That's why he knows how to follow a trail. He can almost see in the dark."

"I hope not," said Thurston. "That might be bad business for us."

Christian merely laughed.

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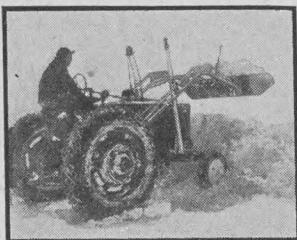
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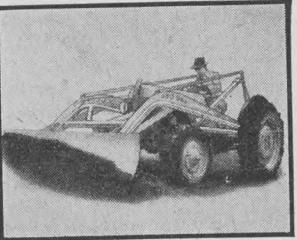
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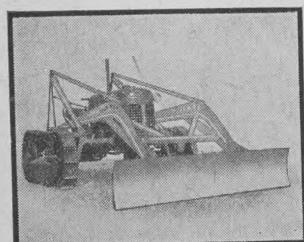
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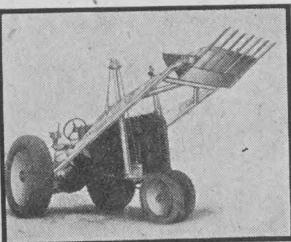
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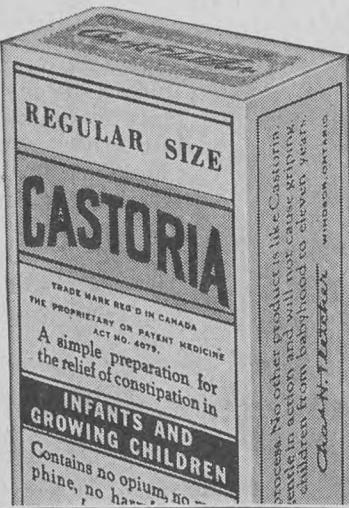
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"NOT so bad," he said. "He won't shoot you in the back, no matter what happens. There's no Indian in him. He'll give you as much warning as a rattlesnake before he starts spraying lead."

That was the brief picture of Silver that Christian painted, and as it ended, Thurston asked:

"Why does he hate you, Christian? What good would it do him to nail you down?"

"Newspaper space," said Christian. "He wants glory. And he thinks that there isn't room enough in the world for the two of us."

"Well," said Thurston, "if he's as clever as you say, and can work in the dark so well, it's pretty certain that he won't run into the trap that you've laid for him."

"It doesn't matter what he sees," answered Christian. "The fool has a sort of a code that he lives by. If he has a partner, he has to get the other fellow out of trouble every time. He knows that if we have young Gary, we'll make a dead man of him by the time the day commences. Sometime before the dawn, he's sure to try his hand. He may do anything he can think of that's clever, but cleverness won't help him now. There's only one way for him, and that's to rush the camp!"

"Aye," exclaimed Gregor, exultantly, "and that will mean one Colt against three shotguns. But can't he work some trick here?"

"Look around for yourself," said Christian. "What can he do? If he had wings, he might drop down out of the air and carry Gary off in his talons. That's about all that he could manage, I take it."

THEN he commanded: "Keep on the stir. The best way to handle him is to meet him on the way and get in the first shot. He'll sneak up through the trees and probably, on one side or the other. Keep sifting in and out. Use your eyes and use your ears. This storm that's blowing up makes everything a lot harder for us."

The trio broke up again. Thurston and Gregor moved off to the trees, and Christian remained walking up and down in front of the prisoner.

The sky was now almost totally covered with clouds. The stars whirled through the rents, now and again. The wind struck in quickening gusts, with a louder roaring, and when the lightning played in the northwest, it showed a hood of rain lowered over the higher mountains. Sometimes the lightning seemed to set all the rain on fire, like a gas, and against that dull flare the big trees stood out. There was one thunder-blasted giant with a half-naked head that remained seared forever upon the memory of Jim Silver.

Rain began to rattle around him, big drops that splashed from the polished rock against his face in the fine spray. The weight and sting of the

drops he could feel against the back of his neck. He had taken off his hat. The wind cuffed his head from behind and pulled almost painfully at the roots of his hair.

He was cold, he was wet, but he remained in his place, motionless, watchful as a cat beside a mouse hole.

Then, at last, he had his chance.

ALL three of the watchers, had, for the moment, stepped out of sight. Rain was falling in sheets now. It would ease away in a moment, he felt sure. But the lightning flash that fell jagged out of the heart of the sky just overhead, showed him the polished, wet green of the trees, the cowering she-wolf in the clearing, the bowed form of the captive, and not even a glimmer of any of the guards. They were effectively carrying out Barry Christian's doctrine of watching in the trees for the approach of the rescuer.

Instantly he dropped the noose of his rope—and missed the figure below him.

He jerked up on the rope and got nothing. The wind must have blown the noose awry to spoil his cast.

He tried again, though in a misty darkness that shut out view of his target. Through the smother of the rain he cast with a wider noose, and hauled in, and again he caught nothing.

The rain, instead of letting up, fell now with a mightier violence than ever. It struck on his back with ten million little hammer beats. Then the lightning cleaved the watery air again and showed him a scene covered with dark or glistening pencil strokes of rain, like a photograph taken in a dim room. He could see the target, that instant, and as he threw the noose of the rope again, he saw something else—a vaguely outlined figure not far away, coming out from the trees. The man was Gregor, walking with his shotgun sheltered under his arm, his head down to the rush of the rainfall.

THE thunder burst over the head of Silver like a load of rocks on a tin roof. He pulled in on the rope, half despairingly. He could not believe his fortune when he found a weight attached to it!

He rose to his feet. Already, long before, he had selected the small jags of rock on which he would brace his feet. He planted himself accordingly and hauled. He had feared that it was merely an outthrust of rock at the base of the cliff that he might have snared, but he found a ponderous, loose weight at the bottom of his line.

He could not get a free haul on the weight. He had to lean back to get his full strength at the work, and that meant that the rope ground against the edge of the cliff, and the friction used up a large part of his effort.

He took short arm hauls, giving himself half a second of rest between the efforts, his right fist braked against his



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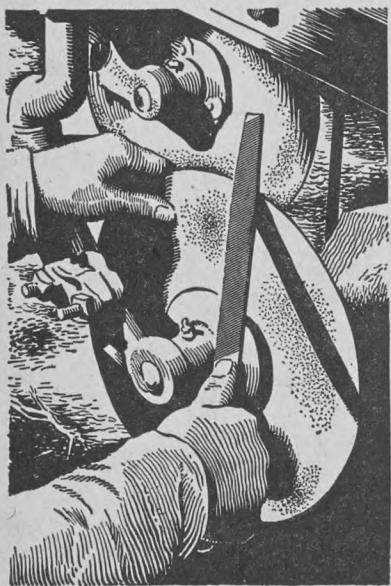
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hip. The weight grew heavier and heavier, or so it seemed.

He prayed that there might not be another flash of lightning. In the extremity of his labor, his head jerked back with each swing of his body, and that was how he saw the clouds breaking above him, the stars showing through like a whirl of bright golden bees.

The weight came closer. He could tell that by the shorter oscillations of the rope. Then the greatest of his efforts failed to budge the rope.

Fear made his eyes swell suddenly in his head. He took a breath, made ready, and hauled with all his might.

There was not the slightest give!

Had the body or the clothes of Gary caught against a sharp projection of the rock? He leaned and made the free end of the rope fast to a knob of rock. As he finished the knot, the rope slackened out a little. And then, again, the lightning split the heavens, and the thunder shouted at his ear, filled his brain with deafness.

Not total deafness, however, for as he crawled to the side of the ledge, he heard a wild voice, the voice of Gregor, shouting from below:

"Silver's here! Silver! He's hauling Gary—"

Before the words ended, a shotgun roared, and a whistling blast of the buckshot tore the air just in front of Silver. If he had leaned out from the rock an instant sooner, that discharge would have knocked out his brains, he knew.

As it was, he found that his first guess had been right. It was a projecting rock that had halted the upward progress of Gary. It was, in fact, the very edge of the cliff itself! He groaned at his folly in not calculating, accurately, just how much slack he would have to draw in to bring the body to the lip of the rock, for here was the prisoner, pressed close against the ledge, in easy arm reach.

SILVER gripped the other's coat at the nape of the neck with a mighty hand and lifted until the springing tendons on his back and shoulder threatened to snap—but he managed to sway Gary up and over the ledge.

They sprawled flat, side by side, as two more shotguns belched in the lower darkness, and the terrible, ringing voice of Christian began to shout revilements at Gregor.

"The horses!" shouted Christian. "Get the horses! We'll cut 'em off in the woods. This is going to be our night before it finishes!"

Silver, with one hand, drew his hunting knife to cut the bonds of Gary. With the other hand he fumbled at the ropes. And the first thing that he found was that his lariat was around the head of the captive! In his effort to free the man, had he hanged him?

He removed the noose, cut the bonds, tore the gag from the mouth of Gary, and jerked him to his feet. A loose figure sagged against him. A dead, limp weight remained in his arms.

Lightning played again. By the thrusting flash of it, Silver saw the face of his friend. It looked like death, and horrible death. The mouth sagged wide open, and there was blood about the corner of it. The rope mark was pressed into the flesh still, as though Gary had bitten at the rope and tried to keep it in place in that manner, when he first felt the noose slipping up around his body after the last cast of Silver. The earlier casts must have brushed him and warned him on the manner in which his friend was fishing to save his life from above.

PERHAPS the pressure of the rope alone had been enough to strangle Gary. Perhaps the effect of the gag which had been wedged inside the teeth of Gary plus the rope had turned the trick.

Silver moved the body. The head fell

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limply back. The eyes were partly open. Another flare of the lightning showed that.

He stood there with a helpless bulk in his arms—and terrible Barry Christian and his men were coming on horses to comb the woods for prey!

Silver threw the body of Alec over his shoulder and ran stumbling back to Parade. Over the withers of the horse he bent the burden, mounted, and made the loose hulk sit up before him.

Now he was ready for flight, at least, if Christian should sight him. And at the same time he heard what was a sweet music to his ears—a faint, gasping sound from the throat of Alec Gary.

SILVER instinctively threw upward one look of gratitude. Then he sent Parade swiftly through the darkness down the slope. It might be that he would encounter the enemy on either one side of the way or the other, but he took the chance because already another idea had come to his mind.

Alec Gary was fighting hard for breath now, groaning and gasping, and life was returning rapidly into his inert body. He was able to maintain himself erect by the time Silver had circled back through the woods to the point which he desired.

Then from the mountain slope just above, he heard the crackling of guns, a brief burst, silence, a distant shouting.

Had they mistaken one another in the darkness, and opened fire blindly? Silver could not help smiling as he thought of that possibility. He was out of the saddle. Gary had slid down to the ground, still gasping for breath.

"Stay here—move if the horse wants to move," Silver warned him, and glided straight ahead toward the clearing.

Lightning showed it to him through the trees. He saw the open space and the chained she-wolf. Straight to her he went. She lay flat, as though to be exposed to the lightning without any shelter over her head had left her senseless.

In one moment the flying fingers of Jim Silver had loosed the collar from her neck. As he stood up, he heard a faint whine that diminished along the ground. And the mate of Frosty was gone like a streak away from his feet.

With her went the nearest chance of capturing Frosty and the secret of the lost gold mine. But at least she had been taken from the hands of Christian; she would no longer serve as a lure to drag back the great Frosty into a trap.

Silver rejoined Gary.

What he wanted, and what he hoped, was to find Gary sufficiently well to take care of himself; instead, he discovered Gary lying on the ground, softly groaning. And that ended his chance of taking Barry Christian and Gregor and Thurston in hand that night. His duty

would be to Gary first. Once more the heir of Bill Gary was a load tied to his neck.

So he got Gary back on Parade and rode behind him down the slope of the valley and up the farther side.

He regained the old camping ground. He could trust that Barry Christian would hardly hunt for him that far afield, to find him with his helpless man. Therefore he ventured on building a fire well screened about by rocks and trees so that the only strength of it rose straight upward in the air. He stretched his sick man by that fire and covered him with a slicker. Gradually the warmth restored the tied-up circulation of Gary, though still for a long time every breath he drew was a muffled groan.

When he could speak, he said: "They would have murdered me by morning. They would have done me in. I heard Christian say so."

"I heard the same thing," said Silver. "But they missed you—forget about it!"

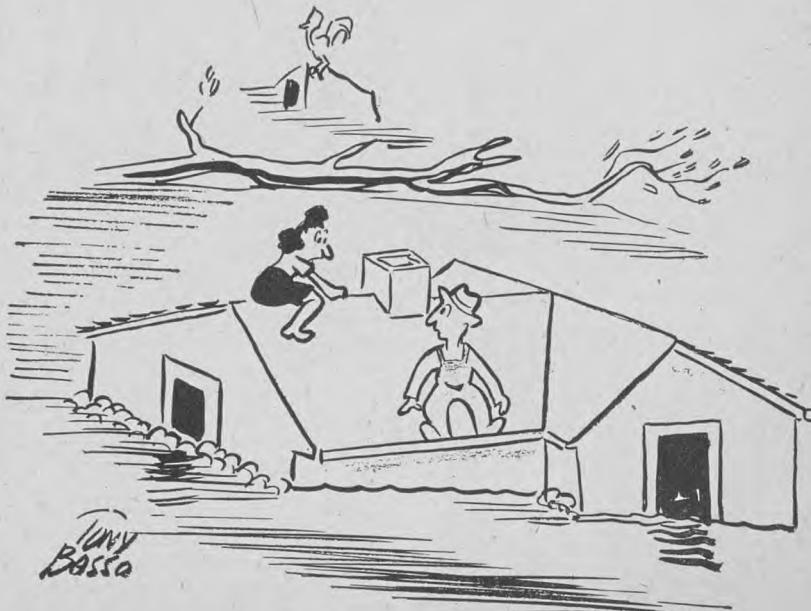
"Forget about hell and the chief devil on the job!" muttered Gary. He stared at the fire with great eyes, and then rubbed his battered, torn mouth. He spat blood. His whole body was trembling.

"I felt the rope brush me two or three times," he said. "If I could have moved, I would have rolled away. If I could have yelled, I would have called for help. I began to strangle with fear. I had a crazy idea in my head that I must be blocking the entrance to some snake's den, and that some big, poisonous rattler was about to sock his fangs into me. It didn't occur to me that a rattler would have sounded off first. And then the rope caught around me. I understood then. I knew that you were up there fishing for me, Jim. But I didn't see how it could work. I didn't see how you'd have strength to pull me up."

"I WAS a half-wit," said Silver. "Otherwise I would have brought up Parade and hitched the rope to him. I would have hauled you up with Parade instead of with my arms."

He paused. Gary nodded. Then he went on:

"Then I felt the cursed noose slipping up around me little by little. It wouldn't catch hold around my body. It wouldn't catch me around the shoulders. When it slipped off my shoulders, I leaned my head forward. My mouth was held gaping—wide open—by the gag that Gregor had shoved into it. I couldn't bite on the rope, but I could hook my teeth over it. Then came a big, strong pull that lifted me right off the ground. The noose froze in on my head. The ring of it ground into the base of my skull. I thought it was smashing the bone. The fore part of it crushed back into my



mouth. I thought I'd be strangled, or that my head would smash in.

"I TRIED to get the rope out of my mouth. It seemed better to die the way Christian would kill me than the way I was dying then. But I couldn't get the rope out of my mouth. The noose was freezing into me deeper and deeper. It shoved the gag back into my mouth until I couldn't breathe any more. I was strangling. All the time I was being hauled up higher and higher, and all the time the noose was biting into me, constricting, tearing at the flesh, threatening to smash in my skull. But the strangling was the worst. There was blackness with spinning red lights across it. Then there was just the blackness and no lights at all. And after that—I died. I mean I thought it was death. It was just the same as death. Just the same agony."

"But afterward I saw the whirled lights and the blackness. I was on Parade, and your hands were holding me up."

He had talked himself back into a full realization of life, and how near he had come to losing it. Now he sat up suddenly and stared at Silver.

"Nobody else would have thought of that," he said. He measured the heavy shoulders of Silver with his eyes. "And nobody else would have had the strength to do it, even if he had thought about the trick. But if I can get my chance at Barry Christian and Gregor, maybe I could partly pay you back that way, Jim!"

"Steady," said Silver.

He had stripped off his clothes and wrung them in his powerful hands, the water spurting out in strong, muddy jets. Now he pulled on the damp things again. The wind still was blowing in gusts, not steadily. The rain rushed downward in great volleys. Sometimes drops fell hissing into the fire around which Silver had begun again to roast rabbit meat.

"WE'RE comfortable enough here," said Silver. "And Christian is groaning now. He's lost you. His trap has been sprung, and the she-wolf is gone. Whisper, they call her. She's gone, and Frosty and she are hitting it for the tall timber somewhere, side by side. That means that Christian is as far as ever from your uncle's gold mine. He's lost Whisper, and that means that he's lost his first real chance at Frosty."

"What turned the she-wolf loose? I know they call her Whisper. What turned her loose?"

"I did. That's why I left you with Parade."

"Why didn't you kill her?" asked Gary. "They have the dogs, and the dogs still will know her scent. They ran her down before, and they'll run her down again. That pack will trail and catch any wolf in the world except Frosty. You should have killed her, chief."

Silver drew a long breath and shook his head ruefully.

"Perhaps I should," he admitted. "But just then it seemed to me that she'd won a right to run a little longer beside Frosty. Gold mine or no gold mine—cattle killing or not—Frosty has some of the makings of a gentleman, Alec. Anyway, Barry Christian is the worst wolf of the lot!"

It rained all of seven days. It rained as the sky can only in the mountains. The winds held steadily in the northwest, carrying vast masses of water vapor in toward the heights, where the currents were forced upward, the mist congealed to drops, and mile-deep clouds disgorged their contents swiftly, continuously.

The sound of the rivers increased all through the land. The forests were sodden. The grasses were pale. A million little rivulets, running day and night, carried yellow detritus down the slopes, and in the ravines the creeks were

white with eager speed, and the rivers they joined kept thundering with increasing voices.

There was rain by day and rain by night. Only now and again was there a pause as the clouds broke up for an hour or more. The lowlands were flooded. Worst danger of all, now and then a cloudburst filled a number of upper ravines all in an hour, and sent the contents hurtling down into the narrows of some greater valley, a wall of water, a great bore that whittled the trees off the banks, shaved away the banks themselves, reached out casual hands here and there, and flicked cabins and all their contents into the basins of the streams.

BUT all through this bad weather Frosty was the happiest wolf in the Rocky Mountains. On the night when his mate was delivered from the second mortal peril of her life, he had heard her howl of freedom, of release, and of yearning, and he had come to her as to a star. After that he had marched straight across the mountains, passing right out of his known range into strange country. He had turned the next day and come back into his own country, to a point a full 30 miles away from his former abode with his mate. And on that day he had found a young and foolish deer in the higher hills, and he had taught his mate the delightful game of deer hunting.

Wolves do the trick by knowing the habits of a deer, which runs full speed for a certain length of time and then, if not followed closely, turns off the trail sharply to one side or the other, and is apt to lie down and try to make itself invisible in the woods until it has regained its breath.

THE trick consists in spotting the deer and then posting a hunter at either end of the approximate course in which it is expected that the venison will run. Frosty was an old master of the art, not because he had had help before in doing the thing, but because he more than once had studied the devices of others of his kind from some high place, and had waited until the kill before he descended to rob the victors of their prize.

There was nothing that Frosty liked so much as meat that had been warmed for him by the labors of others!

Now he had a mate faster than himself on foot, though not so enduring, and though she had not his brains, she was at least a good pupil and a faithful follower. So he took her down the valley, posted her, returned to the deer, and gave the animal a good flying start toward the she-wolf. That deer ran through the valley three miles like a raging wind. At the end of the three miles Whisper sprang up.

She headed the deer right back up the valley, and the hunted beast, with not a doubt that it was the same wolf which, wing-footed, had managed to head her off, came hurling back up the valley, only to find big Frosty, fresh and well rested, all prepared for her.

She knew then that she had been tricked, and broke straight up the valley slope to get to new ground; but six miles of sprinting will kill even the heart of a strong deer; she lasted another five miles or so, with Frosty at her heels. Then he cut her down, called Whisper, and would not taste a morsel until Whisper had come running up and been received by his red laugh of welcome.

The deer was the beginning of a streak of good luck and astute hunting which kept their larder filled, and though Frosty kept thinking of the flat lowlands where the scent of game was crossed by the odor of man and steel, he refrained from leading his mate down on another expedition. Her eyes were still uneasy. In her sleep she moaned and twitched her legs, still fleeing from man in her dreams.

In the meantime, there was no sight,



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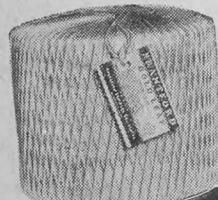
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or sound, or smell of the dog pack that had caught her once before, but on the seventh day after her escape the keen ear of Frosty, which was always studying the sounds of the mountains and dissolving them into their component parts, detected the baying of dogs.

HE knew the hateful chorus and leaped to his feet. His mate jumped to his side with her mane bristling. She held her head high, exactly like his, and then she made out the gloomy music in the distance once more.

Her red length of tongue hung out. She began to pant, and with her shifting, bright eyes she searched for shelter. There would not be much run in her this time. Terror would freeze up the strength of her limbs quickly; fear would constrict her breathing.

So Frosty headed for the best water hazard that he knew anything about.

Wolves don't like water, but neither do dogs. Frosty headed straight for the Purchass River, whose valley splits the Blue Waters in a long knife stroke. What Frosty wanted to do was to enter the current and swim down it a considerable distance until he would reach a series of low sand bars that ran out from the farther shore. There he could land and wade ashore into thick brush.

Twice before this he had shaken off persistent hunters after his scalp by the same maneuver, and though he was not one to duplicate his measures in times of need, he felt assured that this was the trick to get Whisper away from the dogs with the least expenditure of effort.

So he jogged overland with her. On the high verge of the Purchass ravine he paused and looked over the ragged mountains through which they had just come, and listened to the hateful singing of the dog pack far away. Then he took Whisper zigzagging down the side of the canyon to the flat ground beside the water.

The stream was high. It had swollen to such a degree that it was eating away the banks on both sides. Even as he watched, he saw a young willow tree topple, sink, and then whirl away down the creek.

THAT was a bad sign. When things whirled in running water it meant that there are undertows, cross-currents, all sorts of things that will pull down a wolf, no matter how strong a swimmer he may be. Frosty had almost drowned one day in water that to the casual eye seemed almost perfectly calm. That had taught him to watch with care the movement of anything that floated on the face of a stream before he ventured into it.

It had been his plan to take to the water almost at once, so as to make a greater gap between the point where he entered the creek and the place at which he left it.

Now he hesitated so long that at last

he heard the cry of the dog pack open on the heights above him. That started him forward again.

He decided that he would run down around the bend where the creek was joined by two small tributaries and swelled out, at certain seasons of the year, into quite a river. So he headed forward with Whisper and turned the bend.

HE was troubled even before he came in sight of the new picture. The air trembled with noises such as he had never heard in this valley before. Was it merely sound that worked on him, or was there really a slight shuddering of the rocks over which he ran?

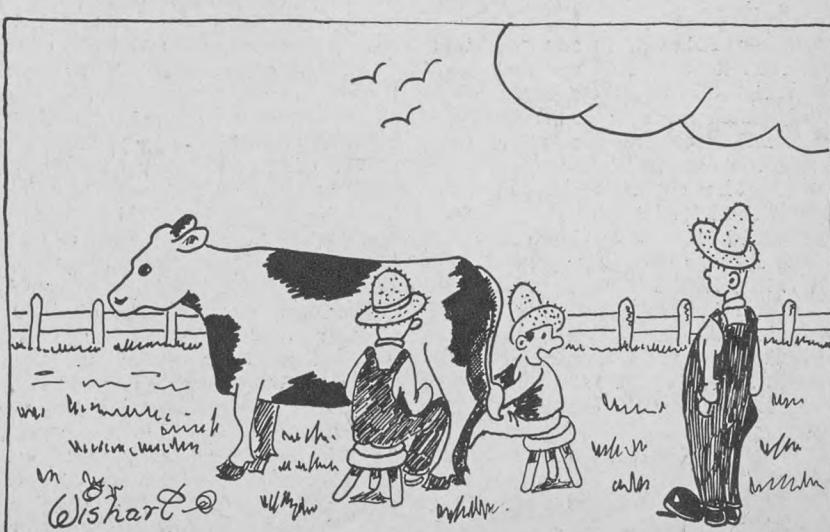
Then he ran around the bend and had full view of a very strange picture indeed. The whole place was so changed that he could hardly recognize it. It filled him with fear to find such alteration. It was like dreaming a thing small and finding it big. The creek he had seen much swollen above its usual size, but it was nothing compared with the two tributaries which here joined the main channel. They came bounding out of their ravines like endless chains of wild white horses, throwing heads and manes, and neighing all together on a deep note of thunder.

Seven days of steady rain had turned the trick. And still there were great black clouds to the northwest sweeping down to hide the tops of the mountains, pouring continual floods out of the sky. To carry away those floods the courses of the creeks hardly sufficed. They were crowded. Old banks had been ripped away. Still the throats of the creeks were gorged. The booming and the dashing noises were something hardly to be believed.

And the shallows where Frosty had trusted that he could land? Well, there was a good, big fat-sided island below the junction a little distance, and now that island had been whittled away until it lifted a transparent streak of foliage only. Frosty could look right through the brush and the trees to the bright frothing of the water beyond.

BUT the noise was worse than the alteration of the scene. The noise stunned him. However it was no time for hesitation now. If he could not use the river as a water hazard, he would have to foot it down the valley as fast as he could run, and then cut back up the slope as soon as the sheer rock cliffs diminished to angles that he could climb. There was a cave that tunneled through half a mile of darkness in the bosom of Thunder Mountain, and offered one small exit on the other side of the peak. He would take Whisper there. In the narrows of the dark passage he could fight off the dogs for a time, at least, and after Whisper was rested, he could go on again with her.

However, he was already very troubled as he turned down the stream once more, and it was then that danger rose



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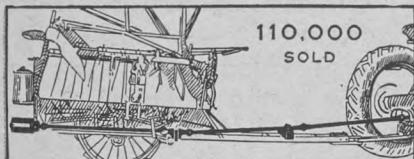
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up and struck against his eyes close by. For, issuing out of a side pass a mile down the canyon, came two riders, the sun flashing on their naked rifles!

Frosty bared his teeth in a snarl as he understood. They had divined, with their crafty human brains, that he was heading across country toward the valley of the Purchass. Therefore they had divided their forces. The dog pack, which was now sending its cry right down the ravine toward the fugitives, had stuck close to the scent. The two riders had taken horse and rifle by a short way to the lower valley, hoping to head off the fugitives.

And they had done it! On one side Frosty had the high, sheer face of the rock wall of the valley. Behind him came the dogs. Before him rode the riflemen.

On the other side there was the deadly rush and swirling of the water!

But the other three things meant certain death. The water was the least terrible choice of all. He hunched his shoulder against Whisper and forced her toward the brink of the stream. She flashed about at him, her eyes green with dangerous light, but in a moment she understood, and obediently, but trembling, stepped down into the stream.

The water was not very cold—but what force it had! It was tugging and pulling as though in anger before Frosty was knee-deep. However, it had to be endured. He stuck out his head and hurled himself forward in a long, skinning dive. The water closed over him. A trick of the current started him rolling. He came up, thoroughly soaked, half blinded, and saw Whisper still tumbling and struggling in the same cross-current of water.

Now she righted, saw him, and tried to swim to him, with panic in her eyes. The currents caught her and thrust her away. She began to struggle blindly. So Frosty headed deliberately toward her, though she was closer to the shore; and up that shore came two riders, rifles ready, gesticulating. And from the head of the ravine ran the dog pack.

Well, those hunters would never get their dogs into such water as this—not even when the prey was in full sight!

WHISPER, when Frosty was close to her, mastered her panic once more and struck out more steadily. They inched away from the bank. Sometimes the riffles of the water covered their heads. Sometimes the currents would catch at them and throw them bodily forward at great speed. Sometimes they tried to dodge as shooting logs, the wreckage from forest far back in the mountains, slid past them. Sometimes those logs were rolling rapidly. Sometimes the currents started Frosty rolling, too.

They had rounded the bend. The two riflemen were riding along the bank, watching. It was strange that the shooting had not started!

It seemed certain that Frosty could not reach the head of the almost washed-out island. He would have to strike it somewhere on the flank.

Then he found a streak of white water that rushed him straight down past the entire length of the island and left him floundering, very tired and breathless, in the middle of the stream below the island. He knew that he could not swim back to either shore from that position. But there was one sudden hope that appeared before his eyes. Right down the stream, a half mile away, loomed the broad forehead of another island, rather close to the left bank. He might be able to make that point.

But another sight stunned and bewildered him a moment later. For on the left bank of the stream he saw two riders, and one of them sat on the back of a horse that shone like a statue of gold. Frosty was hemmed in on either side, before and behind.

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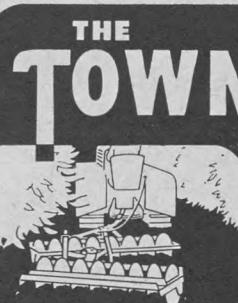
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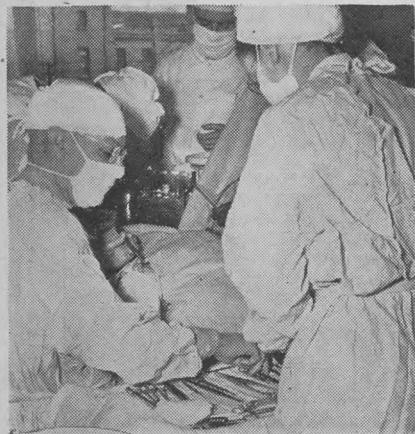
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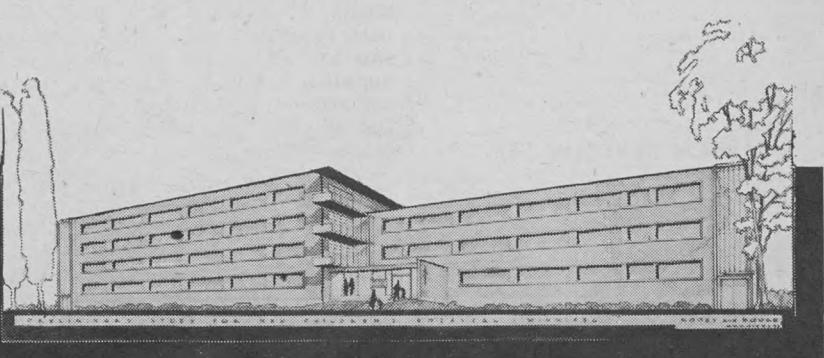
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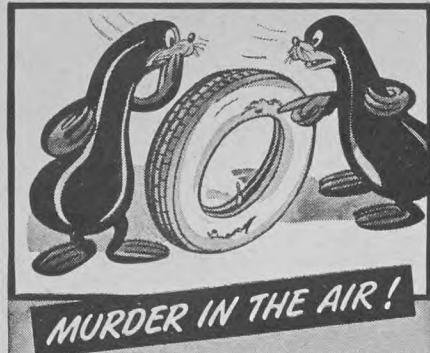
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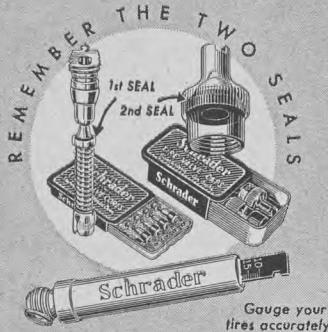




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Rifles You May Run Across

Rifle racks on Western farms hold a wide variety of firearms.
Specific needs brought all of these into existence.

By J. M. GILROY

FOR many generations, the gun was the most important agricultural implement there was in this brave, new world. Its need was even more urgent than that of the plow or the axe. You had to have a firearm to get your breakfast and dinner and supper long before you could think of having your own garden or field. And you needed it, but badly, to protect yourself against the savage red men who showed an active and virulent dislike for agriculture and its practitioners for nearly three centuries.

And just as the narrow-beamed walking-plow proved adequate for the small fields laboriously hacked out of the eastern forests, so did the early flintlock musket or rifle fill the bill for the first waves of pioneers painfully and slowly winning their way westward from the Atlantic seaboard. German gunsmiths in Pennsylvania, and to a lesser extent in the Maritimes and Ontario, were the prime developers of these old original rifles.

You'll find few of them on our old farms now. They're too scarce and valuable for that. In calibre they ranged from around .40 to .70. The barrels were extraordinarily long by modern standards. Some of them had barrels more than 40 inches in length. This was to get the benefit of the slow burning, old black-powder, not as sudden in its effect as our modern powders. Some were double-barrels, side by side, or over and under.

They did their job of blasting out a clear path and keeping the settlers' pots filled with food. If you had one of these weapons in good condition, and were an experienced hunter, you could get your deer or moose easily enough in heavy bush country, where the ranges are short and the quarry comparatively tame.

The writer has only seen one of these old flintlocks in actual use by a white man—on what was positively the northernmost farm in the Peace River block, some 20 years ago. Its owner was an old, old man, with a beard nearly as long as the old weapon he still cherished. No doubt both have long since moved on to the Happy Hunting Grounds.

The old muzzle-loader was made more efficient by the invention of a Scots divine, Rev. Alexander John Forsyth, one time minister of the parish of Belhelvie, Aberdeenshire. He refused Napoleon's offer of £20,000 for his invention, turning it over to the British War Office instead. In due course, some years after the old minister's death in 1843, his heirs were granted £1,000.

The British Army adopted the percussion cap in the late '30's of the last century. At about the same time, the first army breech-loader, a conversion job from the former muzzle-loading musket, was invented by John Hall, an employee of the U.S. arsenal at Springfield, Mass. This was around 1809, but the U.S. War Department wasn't much more progressive than the British War Office of those days. The first few hundred of these rifles were issued to American infantry men in 1816, which was shortly after the close of the Anglo-American war of 1812-1815.

WHILE various adaptations of this rifle were standard in the U.S. Army until almost the outbreak of the Civil War in 1861, for some reason they were disliked by the troops. The outbreak of the Civil War found the bulk of the infantry of both North and South armed with muzzle-loading rifles of .58 calibre.

The standard type in the North was

called the Springfield—a name which persisted in U.S. official nomenclature for more than a century for the standard service weapon; just as "Enfield" was applied to British service firearms for the same period and still is. This latter name is from the government rifle factory at Enfield, on the northern outskirts of London. The writer took a "rifleman's holiday" by making an intensive tour of the place on a 1917 London leave.

Springfield and Enfield rifles were used indiscriminately by both sides in the Civil War. The U.S. and Confederate governments both bought Enfields from Britain. They were the first war relics to come to Canada in any quantity, and are not uncommon in old attics to this day. Both the British and U.S. governments began to arm their troops with the first breech-loaders from around 1860 onwards.

AS a matter of fact, the first breech-loaders and repeating rifles began to make their influence felt on Civil War battlefields. Some U.S. "State regiments" were armed with Spencer carbines, a seven-shot, .50 calibre rim-fire weapon which carried its reloads in a trough or hollow tube in the butt. In some the top half of the butt lifted upwards; in others, it slid back to expose the magazine trough. The action functioned by means of an under-lever. The writer could have bought one in Edmonton for \$5 some years ago; apparently they are not considered very valuable relics.

Amid the baker's dozen of new or adapted breech-loaders spawned during this conflict, two were outstanding—the Remington and the Sharps. The Remington remained and the factory of that name now produces fine, modern weapons. The first breech-loading single shots, mostly in .50 calibre, were sold to new settlers in the Canadian West by the thousands at a ridiculously low price. Some called them the "double-hammer gun" on account of the spur lever which opened the breech after the hammer was cocked. These are quite common yet on old farms and in brush homestead districts.

Later models, sold by the thousands, by mail order houses in the States, are mostly .45 calibre. "Fodder" for these latter models may still be had; they make handy pest-guns when used with shot cartridges. The old Remington rolling-block action was simple and safe, and was adopted for military use by half-a-dozen governments. In fact, as late as the First Great War, the Remington company made these single-shot breech-loaders in appropriate calibres for both the French and the Russian armies.

BUT it was the old Sharps that were, literally, the "big noise" of its day. Made in .50 and other sizes, it was the man and buffalo killer par excellence of the pioneers and riflemen both during and after the Civil War. Its prime function is preserved in the word "sharpshooter." One rare model issued to Union troops had a small coffee-mill inserted in the butt; inevitably, it was called the "coffee-grinder" by the boys in blue.

It was probably this rifle that sounded, more loudly than any other, the death-knell of the herds of buffalo which had to go before the middle west could become a farming country. The hunters who shot buffalo from a stand sometimes mounted a 20-power scope on this rifle and piled up more than 100 carcasses in a day for their skinners to handle. The prairies which had once

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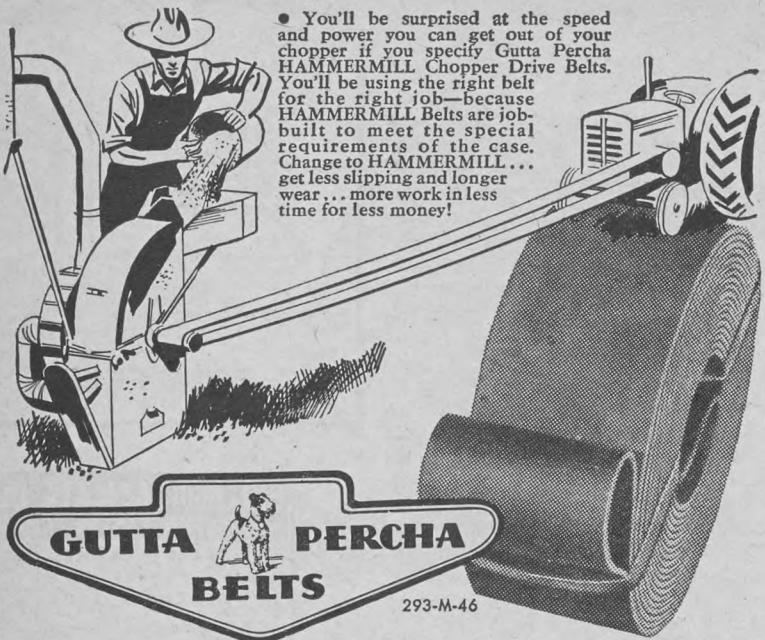
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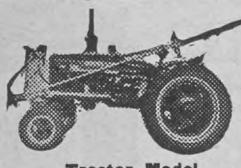
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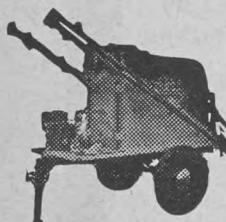
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been black with the thundering herds, became whitened by their bones. The original name of proud Regina was "Pile of Bones"—buffalo bones.

Unless you find a rusty and dusty specimen in some farm attic, however, these old Sharps are scarcer than hen's teeth on the farm. Reason: They had very heavy barrels and a very strong single shot action.

In the mid-1920's when the "wildcat .22 fever" began to infect gun-crack circles, these old Sharps were snapped up like hotcakes, prettied up, new tubes welded into the original barrels, high-power scopes mounted on them, and did superb work on crows, gophers, jack-rabbits and other small elusive targets at ranges up to 300 yards. Hand-loaded cartridges mostly in .22 calibre, but with tremendous powder charges, gave velocities anywhere from 3,500 to 4,500 feet per second initial muzzle velocity. That doesn't exceed the speed of light, of course, but is faster than any other man-made missiles had ever travelled.

The close of the Civil War saw the production of the greatest crop of breech-loaders on record. Most of them had their beginnings during that conflict at the taxpayer's expense, and it was the New England gunsmiths who were most active in invention: Starr, Colt, Winchester, Smith and Wesson, Peabody, Whitney, Blunt, Merrill, Joslyn, Greene, Brooks, Smith, and a score of others most of which have long since fallen by the wayside. (Yes, Colt, and Smith and Wesson also made rifles as well as revolvers and pistols).

SEVERAL factors combined to give the Americans the lead in the development of light, repeating rifles. The Civil War had forced the need for something like that, and then came a tremendous surge of settlement across the Mississippi and the Missouri rivers. The pioneers left the woods behind. In the forests, single shot rifles had been adequate for deer, elk, bears and turkeys. But now came open country, herds of buffalo, and bands of Indians, or white outlaws to menace the homesteaders and land-seekers. Each pioneer aimed to be a walking-arsenal.

It was then, in 1866, that the magic name, Winchester, first appeared on a rifle. The weapon had been made on Henry's patent during the Civil War; now it came out under the company name. The first model used a rim-fire .44 calibre cartridge, and the magazine held the comforting total of 15 rounds.

This was the weapon used by Buffalo Bill Cody in the sport and business of "running buffalo." Instead of using the technique of the sharpshooter, the buffalo runner mounted his bronc and rode full tilt at the nearest herd of buffalo. Stampeding the animals, he rode alongside, firing shot after shot from the hip at full speed. No fine aim was needed here; the idea was to have the muzzle almost touching the target's hide.

The rifle was soon chambered to take .40-40 and .38-40 centre-fire cartridges. As revolvers were made for the same loads, this arrangement simplified the pioneer's ammunition supply and made him a reasonable facsimile of a one-man army in his brushes with red raiders. These rifles are still common, especially in northern bush districts.

FEW of the fine English rifles of that period found their way to the North-west, except as the personal baggage of younger sons who brought out here the same double-barrel rifles favored for African big game—than which there is nothing bigger. Rifles that once cost considerable are now dirt cheap, mostly in second-hand stores in western cities simply because the ammunition for those elephant guns is un procurable.

At this period, the Enfield muzzle-loading rifle had its last hour of glory in the hands of the men who held the "thin red line" in the Crimean hills, or

marched with Havelock and Campbell to the relief of Lucknow. In the early '60's, the .577 Snider (also spelled Snyder in various references), a single shot breech-loader became the standard arm of British troops. The carbine in this model first came west in Canada in 1874 with the original red-coated Northwest Mounted Police. It remained the Mounties' regular rifle until 1885, when it was replaced by the Winchester .45-70 model of 1876.

Kipling wrote that "a Snider squibbed in the jungle," but the monsoons must have affected the ammunition. A neighbor of the writer has one of these weapons, and gets his moose with it every fall. And its blasting report can not be likened to a squib.

The American Army, at about the same period, settled down to the .45-70 Springfield single shot, the standard arm until 1892, although some American troops fought Spaniards with it in Cuba as late as 1898. These are common. Recently, the writer saw a sawed-off version of one of these rifles in the hands of a homesteader out to get his winter's meat. The barrel was held "secure" with snare-wire, hay-wire, and—believe it or not—bindertwine. So far as I know, the man is still alive.

Ammunition makers ran riot in the last 30 years of the last century, on



Left to right: A .41 Swiss; .44 Colt "Lightning Express"; .38 Rook; and a .577 Snider (Mark III).

account of the system of nomenclature adopted to distinguish various loads of the same calibre. The .45 Springfield referred to in the preceding paragraph, for instance, had its fodder called the .45-70-500. The first numeral, with decimal point, referred to the diameter calibre of the barrel; the "70" meant the powder charge in grains, and the "500" meant the bullet weight.

Now .40-60, .40-80, .45-90, .38-55, .32-40, .32-20 began to make their appearance, climaxed by the famous .30-30, the cartridge, that, for half a century, has solved the problem of "when do we eat" for homesteaders, trappers, surveyors and prospectors in the North-west.

ALTHOUGH the Canadian West never saw the prolonged bloody warfare that marked and marred the settlement of the American West—principally as a result of the wise policies of that much-maligned institution, the Hudson's Bay Company, and later, the old Mounties — ex-servicemen settlers from Britain and Canadian veterans of South Africa and the two World Wars have brought over their quota of various military firearms, good, bad and indifferent. Moreover, American mail-order houses have sold a lot of obsolete American and Spanish and Swiss weapons all over this continent.

From South Africa came the Lee-

STOPS HEADACHE

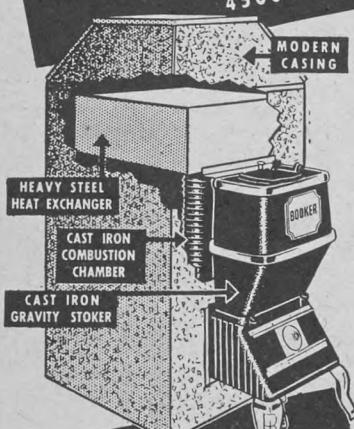
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FUR TRADE JOURNAL
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Metford rifles and carbine, the first .303 calibre weapons with which British Empire troops were equipped. The best Mauser rifle ever made, the seven millimetre, was also brought back from that war. The writer had one of these Mausers converted into a sporter, and for two decades it did its job with certainty and dispatch. The Lee-Metford carbine is still to be found, also, in some settlement areas. It has an 18-inch barrel, a flat, turn-down bolt and full-length stock. A sweet little saddle-gun.

The U.S. Krag-Jorgensen, a .30 calibre magazine rifle, is coeval with the Lee-Metford, but more common here. The magazine flips outward, and the writer has also seen, but seldom, Norwegian army rifles of the same make in 6.5 mm. rimmed calibre, and Danish army rifles in 8 mm. calibre. Ammunition for the two continental rifles is almost impossible to procure now. The first U.S. 3 for the Krag, is known by various designations: .30-40, .30 U.S. Army, .30 Krag. The cartridge looks quite similar to our .303, but they are not interchangeable.

The .303 British will also serve for Ross, Lee-Enfields of various types, the 1895 Winchester lever-action, a Martini-Henry single shot which was apparently a constabulary weapon but quite cheap and common in western second-hand stores, and the pattern .14 Enfield. The last-named is quite rare but a very accurate piece. It was the first service rifle with an aperture sight as standard equipment, to be followed by the Mk III Ross.

THE Enfield was originally designed as a 7 mm. weapon but I have never seen one in this calibre. It is quite common in .30 U.S. Government '06 calibre. The British let the Americans have two million of these weapons in 1917, and they were rechambered for the American load. The Canadian reserve army was armed with these rifles in the most recent fracas. A red stripe on the fore-end showed that they were for American service cartridges.

This crank likes best of all the service weapons, the good old Mark III Lee-Enfield. I have tried Springfields, Turkish, German and Belgian Mausers, the awkward Russian Nagant and the French Lebel. Some have more powerful ammunition; none has such a smooth, flawless action. Hats off to James P. Lee, the American inventor of this action. He also invented the U.S. Navy Lee Straight-Pull. It was a .23 calibre weapon—the smallest military calibre ever made. I have seen two of these weapons—one in a trapper's cabin, and the other in a gun store. Only three "straight-pulls" have been made, the Ross, the Lee, and the Mannlicher.

Nearly half a century ago, the trend towards smaller calibres and faster, flatter-shooting bullets reached its climax with that sweet little rifle, .250 Savage, the answer to the gun-crank's prayer. But the old-timers still swear, albeit a bit too heartily, by their old "hay-burners."



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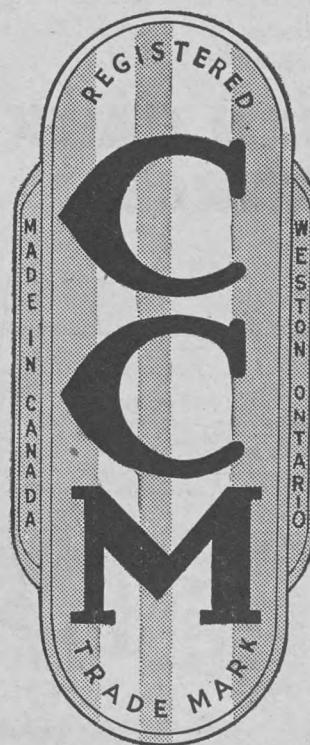
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THE PEACE TOWER

Continued from page 5

freight is than overland freight. For instance, in many cases it is cheaper to send goods by rail to Montreal from some Ontario point, put the goods on a ship, go all the way south to the Panama Canal, pay about \$4,000 canal tolls, discharge the cargo at Vancouver, and even ship it a short distance into British Columbia's hinterland, rather than send it directly from Ontario to Vancouver by rail. It used to be true that the cost of sending logs 8,000 miles from Vancouver to New Zealand was less than railing the same logs some 200 miles on New Zealand's state railways. Coming closer home, the Transport Board would do well to see that it does not cost more to ship freight from Montreal to Calgary, for instance, than from Montreal to Vancouver. Canadian people should insist that the rail rate come a little closer, where possible, to steamship rates. This is not always feasible, but certainly it should not be cheaper to send things farther, the rate should not be more for 2,300 miles than for 2,800 miles.

AGAIN, there are said to be discrepancies where on the prairie, with no grades, the local rate is higher than for the same number of miles in the east. True, density of traffic is always a factor, but inequalities, where they exist, should be ironed out if possible.

But it seems to me the real battle will be over the postage stamp rate versus the mileage rate. For instance, if you mail a letter from Yarmouth, Nova Scotia, it goes to Tusket, 11 miles away, or White Horse, Yukon Territory, 5,000 miles away, for the same money, four cents, but if you buy a car at Windsor, it costs you dollars and dollars more, if you take delivery far from the factory. F.O.B. Windsor is no fun when you live in the Peace River or Prince Rupert.

Now on the face of it, it does seem absurd that you can buy certain standard products like oranges and shoes and typewriters and magazines pretty much

anywhere for approximately the same price. Yet toothpaste is pretty much standardized, as are shoes, and big things like furniture. Here then, is a working demonstration of the postage stamp tariff. When one buys these things, one is rarely aware of where they are made. But nobody ever forgets that a car is manufactured in western Ontario!

Yet one cannot deny that things like coal, lumber and other necessities are crucifying our domestic life because of high freight rates, and Nova Scotia coal can only penetrate to a certain point in Ontario without becoming uneconomical. So what is the answer? Railways cannot operate for fun, and if we nationalize the C.P.R. we merely subsidize operating losses, which is another way of saying we would invite higher taxes.

BASICALLY, the fight is this; the farmer doesn't care how the thing is done, as long as he can get things cheaply. In other words, if he wants a tractor, he doesn't care how it gets to Kindersley as long as he can get it at the lowest possible price. How do oranges and shoes and sewing machines get there so easily, he is bound to ask. This writer will risk a guess and say that the companies in question probably absorb part of the freight rates. The farmer then may ask, that if a tube of toothpaste can travel all the way to Prince Rupert for the same price it is sold in Toronto where it is made, then why cannot he get a combine in the same way?

Westerners, and easterners too, claim that there is no answer to this argument. But it opens up a whole new field. Will the government go hat in hand and ask the automobile firms or lumber companies to absorb the freight and spread the price around, or will they attempt to revise the tariff in such a way as to leave something for the farmer to pay, and something for the manufacturer too?

This is a grand chance to throw out the old freight rates, designed for use before trucks became common, and before airplanes were thought of as freighting agencies. If the Transport Commissioners can junk the whole business, and start all over again, it might be a good idea.

GRIST FROM B.C.'S LEGISLATIVE MILL

Continued from page 18

tion of the problem. Now he has submitted an interim report in which he points out that most of the trouble stems from a fanatical faction which has been responsible for darkening the reputation of all Doukhobors. This is not a novel idea, as the so-called Sons of Freedom have been generally regarded as the apostles of violence among the Doukhobors.

However, Judge Sullivan offers a new program for dealing with them. He believes that a plan should be worked out for giving education to young Doukhobors, preferably away from their home communities so that they would be free from sinister influences.

"The only real and permanent solution lies in education and assimilation," states the investigator, who says that under present conditions it is impossible to determine even the number of school-age Doukhobors since the Sons of Freedom flout all laws and regulations relative to vital statistics.

The separate school proposal, he believes, should not be financed by the individual communities because that would be too heavy a load for them. The province and the nation should share, he claims.

The fate of the government-owned P.G.E. Railway becomes more uncertain as the years go by without a successful program for its extension northward. When he was premier John Hart was optimistic that the C.P.R. and C.N.R. might combine to take over the costly road and run it as a joint enterprise into the Peace River country.

But the progress has been slow in recent months and meantime the provincial government has been forced to consider appropriations for road-bed improvements and better rolling stock. The road still runs only between Squamish and Quesnel and thus cannot begin to realize its full freight potential because the territory thus served is relatively unproductive. Yet to extend the line even to Prince George would cost more than the provincial government itself feels that it can afford. Some critics are even suggesting now that the rails should be torn up and the road-bed converted into a highway. This would be a humble fate indeed for a railroad which only a few weeks ago became the subject of a feature article in Saturday Evening Post, but it might save the province money.

The airmail is being used more and more by farm specialists on the west coast. Daffodils were shipped by air express in larger quantities than ever before this spring from Victoria to the east. A Fraser Valley turkey farmer has been shipping baby turkeys in similar fashion.

GLEANED FROM THE NEWS

Progress with Grain Alcohol

DURING the '30's, there was much talk and a considerable amount of investigation into the feasibility of manufacturing motor fuel from wheat. An extensive report was issued by the National Research Council of Canada, which demonstrated the fact that alcohol could be used successfully as motor fuel, but that low-grade and feed wheat, if used for this purpose, made available immense quantities of additional fuel. Cost, however, was against the use of wheat for this purpose on any large scale.

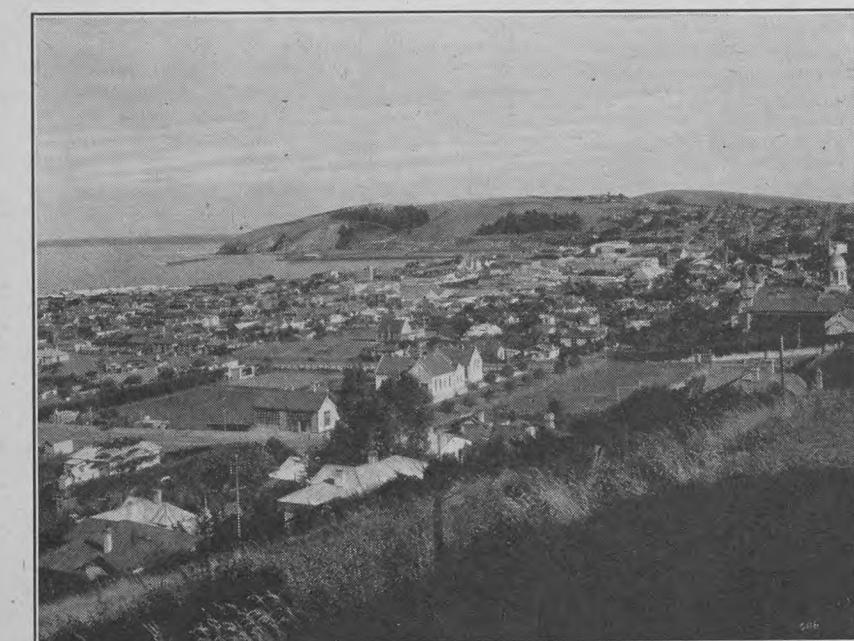
Recently, at the National Farm Chemurgic Council meeting in Omaha, Nebraska, Dr. G. E. Hilbert of the U.S. Department of Agriculture reported on recent investigations at the Northern Regional Research Laboratory, Peoria, Illinois, of which Dr. Hilbert is Director.

Blending one gallon of ethyl alcohol with nine gallons of low-grade gasoline was reported to make ten gallons of premium grade, anti-knock motor fuel. A small gadget which automatically injects a mixture of alcohol and water into an engine under heavy load, would permit a truck driver to take hills in high instead of at five miles per hour. For passenger cars, similar advantages can be obtained by using devices to inject alcohol-water mixtures, while using low octane gasoline as the principal fuel.

The cost of manufacturing grain alcohol could be reduced about three cents per gallon by using a fungal amylase developed at the laboratory as the substitute for malt in the manufacture of grain alcohol.

The shortage of motor fuel in the United States, coupled with the trend toward high compression engines was reported to offer some nearer opportunity for the use of alcohol as a motor fuel. Its use still depends on price, as the present prices of grain make this alcohol too expensive. However, since the opinion seems fairly general that the tremendous increase in the U.S. use of liquid fuels will be hampered only by capacity to produce such fuels, alcohol made from grains may have a place as a supplement to gasoline supplies.

It is also reported that while alcohol made from corn costs 50 cents per U.S. gallon compared with 25 cents for gasoline, alcohol-water injection with low grade gasolines will provide cheaper fuel for heavy duty engines under heavy load at full throttle and give better operation than premium grade gasoline.



Where plain and ocean meet at Oamaru, New Zealand.

Items of current news which affect agriculture in different lands



A lovely setting for the war memorial at Darlingford, Man.

If necessity drives the United States to the use of grain alcohol, the starchy crops such as grains and farm waste such as corn cobs, flax shives and sugar cane bagasse are likely to be used. Hope seems to lie chiefly in the fact that gasoline-alcohol blends give performance in engines equal to or better than a good grade, premium gasoline, without any change in engine design or adjustment.

Peanuts for Britain

FIVE hundred miles south of the equator in East Africa, Britain is engaging in a tremendous scheme for the production of oil crops—in this case, peanuts. The scheme is underway in Tanganyika, and at present 500 Europeans and over 5,000 Africans are engaged in the project. They have already cleared 14,000 acres and have planted 7,000 acres to peanuts. When fully developed, the project is expected to result in the planting of 1,605,000 acres and to secure an annual production of 672,000 tons of shelled peanuts. As originally conceived, this result was anticipated by 1952, but it has recently been said to be impossible of achievement in this time. The scheme was first broached in March, 1946.

A total of 24 million pounds is being provided by the British government to finance the project, plus an additional 2.5 million to develop port facilities. In its initial stages the work is being organized by the United Africa Company

at the request of the British government until a government corporation can take over. Eventually the plan is to organize 107 mechanized units of 30,000 acres each. The program for the year 1948-1949 is to complete the clearing of 120,000 acres. One of the difficulties is that about 10 timber trees per acre must be removed. Equipment for the entire project is to a considerable extent disused war material and includes 70 D-8 caterpillars which need overhauling as a result of rust. A sawmill has been delivered for handling the lumber, and was originally used by Canadians during the war, near the Devon-Cornish border.

Some idea of the magnitude of the project is to be gleaned from the fact that the largest development is proposed for the southern province of Tanganyika in which will be located 55 units, or 1½ million acres. At present there is no port, no railway, no landing fields, and very poor roads. Four million pounds will be needed for the construction of a port and a hundred miles of railway. Oil and gasoline will be supplied by the construction of a six-inch pipeline.

Eire Eggs for England

EGGS illustrate Britain's rising food bill. Last year she paid £13,481,000 for 648,603 tons of eggs, whereas in 1938, she paid £12,375,000 for 1,551,000 tons of eggs.

In 1947, Canada supplied very close to half of all the eggs Britain imported—more than three times as many as Denmark, the next largest supplier, 3½ times as much as Ireland and five times as much as Australia. In 1938, however, Denmark supplied 50 per cent more eggs than Canada now supplies, and the Netherlands not far from the quantity Canada supplied last year. Many other countries also contributed to Britain's egg supply before the war.

Last November, Britain and Eire agreed that the Irish Government should undertake a scheme to develop the poultry industry. In January it was decided that such a scheme should be put into effect without delay and that the Irish Department of Agriculture should put into operation a three-year program of development. Eire will spend £1,350,000 on this program, and the British Ministry of Food will provide a similar sum, by way of a special bonus on Eire eggs.

Britain has also agreed to purchase 85 per cent of the exportable egg surplus from Denmark; and in August last year, Britain agreed to purchase the exportable egg surplus from Australia to the end of 1948. Another contract was

in effect in 1947 for purchase of Netherland eggs.

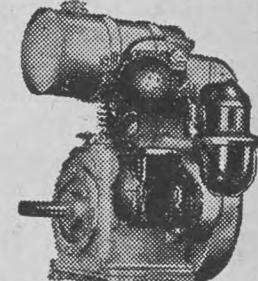
Herd Improvement begun in Manitoba

THE first dairy herd improvement association in Manitoba was organized about a year ago and recently completed its first year of work. It consisted of a group of 25 dairy farmers with 400 cows on test, many of which started after having been milked for two, three or four months, and after their periods of highest production. At the end of the year, 103 cows had produced a mature equivalent of 300 pounds butterfat in 305 days, of which 24 produced 400 pounds in 305 days and qualified for a blue seal certificate. Average production in the 25 herds was 7,503 pounds of milk and 256 pounds of butterfat.

As a result of the year's work, many members changed their feeding standard and culled out poor producers. Others have reduced losses from mastitis and practically all members one way or another changed one or more management practices. A second herd improvement association commenced operation on February 1, also containing 400 cows.

In the same area is the Rat River Artificial Breeding Club which bred approximately 850 cows last year with good results. Over 95 per cent of all cows bred conceived within three services. It is expected that 1,000 cows will be bred at St. Pierre this year and an additional 600 cows at a sub-unit formed at La Broquerie.

Three sires are used at the station, one owned by the Dominion Department of Agriculture, and the other two, both sons of Montvic Rag Apple Ajax, owned by the Manitoba Department of Agriculture. The elder of these two, the son of a record cow (with 28,109 pounds of milk and 1,016 pounds of fat to her credit), settled 225 cows in the last fiscal year.



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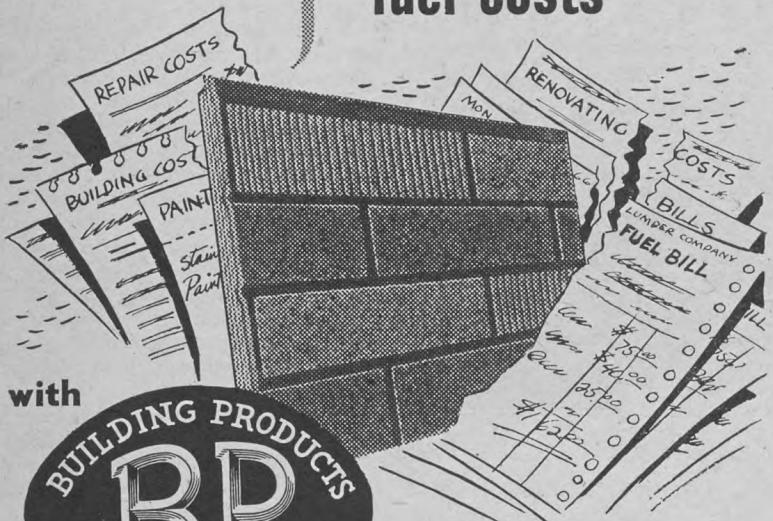
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Progress Through Mechanization

By saving labor, the machine increases efficiency and raises farm levels of living

HERE is probably no single individual in any one of the three prairie provinces, at all aware of what has been going on around him, who does not appreciate to some extent the changes which farm mechanization has brought about, both in the United States and Canada during the war years. Farmers were able to achieve record output of farm products, and while the war years were, generally speaking, years of good crops and favorable weather, it is doubtful if even this factor was responsible for more production than mechanization.

Without growing weather, of course, increased production would not have been possible at all, but granted the necessary sunshine and rainfall, mechanization enabled farmers to increase output per man by covering more ground with greater timeliness.

An effect of mechanization which is sometimes forgotten, is the displacement of horses by tractors and power equipment. This has meant the use of less land for feed production and a proportionate increase in land devoted to food and fibre for human use. We do not know of any figures indicating what this has amounted to in Canada, but in the United States it has been calculated that the displacement of horses and mules has resulted in 55 million acres of crop land being freed to grow food and fibre, and it has been stated that "production from these released acres accounted for one-half of the increase in the output of farm products for human use during the period between the two great wars."

Every prairie farmer who has both tractors and horses at one time or another realizes the effect of power farming on the timeliness of farm work. In years when late, wet springs have seriously delayed planting, the use of tractor power and equipment has enabled farmers to get on the land and complete the seeding job in a comparatively short time. If this had been done by horse power, it would have been impracticable to seed anywhere near the same acreage with much prospect of a crop. If, to this advantage, and timeliness, there is added the fact that power from tractors has enabled farmers to do heavier farm work more efficiently and thoroughly, it is easier to understand and appreciate the progress resulting from mechanization.

CANADA and the United States, though entirely separate countries, are so nearly alike in their methods that what applies broadly over agriculture in one country, pretty well applies to the other. It has been calculated with respect to U.S. agriculture, that in 1945 one man-hour of farm work meant 44 per cent more production than it did in the period 1917-1921; and that half of this saving in human labor resulted from mechanization, the remainder arising from technological developments, including increased yields of crops and livestock. Putting the above figure another way means that in 1920 a single farm worker supported himself and nine other persons in food, whereas today he supplies 15 other persons with food, and in 1820 he could supply only three additional persons.

A single tractor and its equipment are estimated to save about 850 hours of man labor, compared with the time, animal power and equipment in use 25 years ago. Part of this saving, of course, is in the elimination of the time required to do the chores for work animals.

Another factor and a very important one in the progress of mechanization is illustrated by the fact that a modern 10-horse power tractor pulling a two-

bottom, 14-inch board plow, will plow eight acres per day, whereas the same sized plow drawn by five good horses will only plow four acres in the same period. On mechanized and modern grain farms on the Great Plains, of which Canada is a part, an acre of wheat can be produced and harvested with around three hours of man labor or less, whereas when our equipment was horse-drawn, the man labor required was about eight hours per acre. Similarly, hauling grain and other products to market, or bringing farm purchases to the farm, is now done much more quickly and with less waste of time by the use of trucks and cars than when horses were required to haul all products to and from town.

IT is still estimated that 60 per cent of all farm work is done with hand tools or by hand. In the United States, this means about 12 billion man hours. There appears, then, to be ample opportunity for further reducing the amount of man labor required in food production. This is especially true in connection with the livestock industry, where three-quarters of all the work involved is done by hand.

An interesting fact in connection with farm mechanization is that total farm output has not increased as fast as the total volume of farm power and machinery, including horses. By 1945, it was estimated that U.S. farmers had nearly $5\frac{1}{2}$ times as much farm power, machinery and equipment as in 1870, but farm output for human use was only about $4\frac{1}{2}$ times as great. On the other hand, total physical production costs, that is, the amount of labor, power, land and other resource involved in one unit of farm output, were reduced in 25 years by about 26 per cent, while in the same period, the costs of labor, power and machinery only, per unit of output had gone down about 30 per cent. Statistics are said to prove that the total physical cost of agriculture production has not changed much since 1910, though total farm output is greater. Most of these costs are in labor, power and machinery, and gains in production recently have resulted from shifts in the relative importance of these three factors.

The irony of the farm situation is that at times during the past, farmers have received very little for their labor and for the use of their land, in spite of the fact that they have increased the efficiency of their productive effort. This was particularly true during the '30's—not only in the United States but in Canada. Farmers make important gains in real income during prosperous times such as the present and there can be little doubt that the trend toward increased use of machines will continue, at least for another generation. This trend will continue to release more and more crop land from the feeding of work animals to the feeding of human beings. It is probably true also that fewer farm workers will be required in the future to produce increasingly larger quantities of food and fibre. Areas which are now less mechanized than others will probably show material progress in this direction. Rural electrification will be a substantial help once it is possible to extend it into more and more rural areas. The farm worker and the farm housewife will be able to use more and more tools and facilities for efficient and labor-saving production. All of these advances should make for more comfortable living and tend to raise the general standard of rural living, though it does not necessarily follow that these higher levels will be accompanied by higher bank balances.

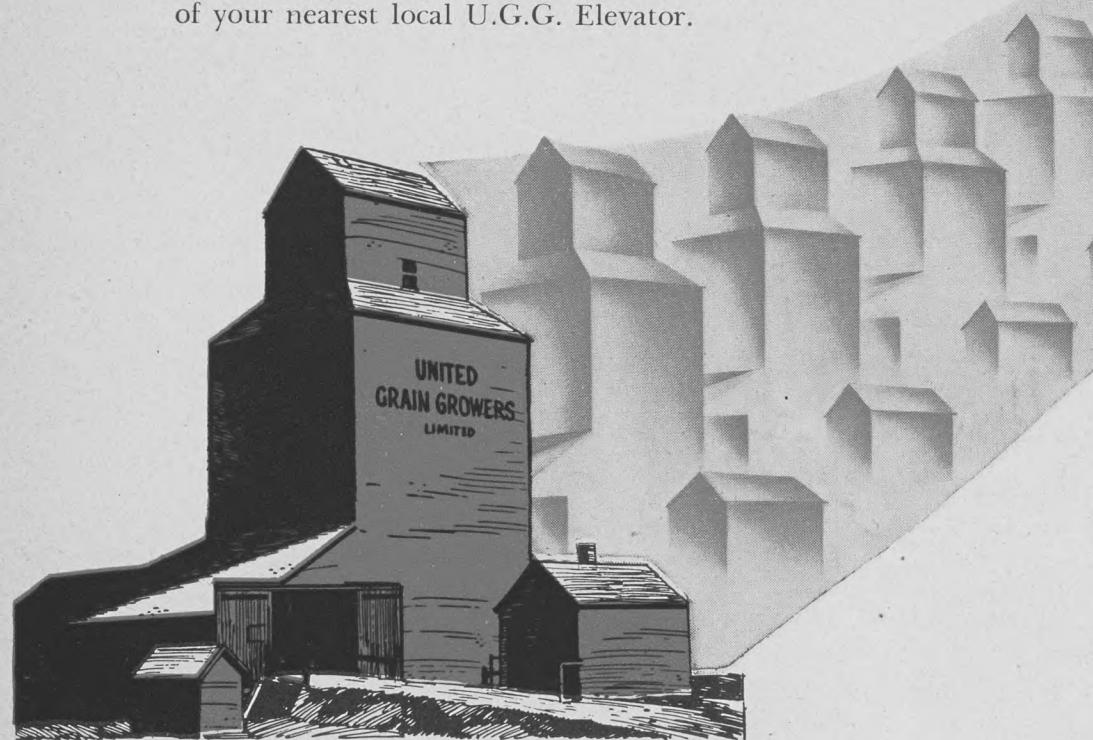
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New Elevators ADDED TO U.G.G.'S CO-OPERATIVE SERVICE

With the purchase, recently completed, of over 100 additional elevators formerly operated by Reliance Grain Company and the W. J. Anderson Elevator Company, U.G.G. Limited is now able to offer at the points enumerated below an up-to-date co-operatively owned elevator service, both for handling farmers' grain and the purchase of farm supplies. (And subscriptions to The Country Guide).

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The Countrywoman

By
AMY J. ROE

Friendly West Coast Visits Bring New Impressions

OF recent weeks I have moved about British Columbia, through the lower mainland and parts of Vancouver Island. Here one meets many former prairie people as well as people from other parts of Canada and from other lands, particularly from the British Isles. Some have come to the West coast to retire from active work or business life. Others not quite prepared for full retirement have endeavored to set themselves up in small enterprises, hoping thus to augment a small pension or a meagre life's savings.

There is a strong contrast between the throbbing pulse of business and industrial activity of a city such as Vancouver with its present population numbering approximately one-half million, its markedly strong engineering and architectural achievements and the quiet places by the sea, beside some lake or along a lovely mountainside. The visitor on holiday or for a rest seeks out the quiet countryside. Villages and towns are strung along the well paved highways, like beads loosely on a chain, until one wonders where one community begins and another ends.

This month I would like to tell you of some of the people I visited, of their interests and work. Sometimes the visit was only a short one. When it was over I felt that they had added to my thinking a little of their own philosophy; that they had evidenced their enthusiasm for some particular branch of work or hobby. Enthusiasm is a good aid to living. So I endeavor to share the experience with Country Guide readers.

THE Women's Institutes are making good progress in British Columbia as elsewhere in Canada. A visit to the office of the superintendent, Mrs. S. E. Gummow showed that membership now stands between 4,000 and 5,000. The number of locals has grown from 179 in June, 1946, to the present figure of 207. The study program is being channelled through four main committees: Home Economics, Agriculture, Social Welfare, and Trade and Industry.

"Our main interest this year has been citizenship," Mrs. Gummow told me. "Members find many ways of expressing it through study of social welfare with emphasis on old age pensions, better dental and medical care for people, especially in rural places and in community work such as making war brides and newcomers feel at home."

Since the Cameron report was issued many locals are centering their interest on its recommendations concerning education in the province. There is considerable interest in establishing dormitories for high school students, particularly in the Campbell River area on Vancouver Island. The local W.I. groups sponsor fall fairs and flower shows, co-operating with agricultural associations in doing so. Members are especially interested in handicrafts such as weaving, leather work, and rug making.

Plans were well advanced for the Annual Convention, to be held this year for the first time at the university. The dates fixed are June 1, 2 and 3. Delegates attending will have accommodation at Acadia Youth Training Camp, paying only nominal board. The Department of University Extension is offering short courses in weaving, home furnishing and crafts, from May 17 to 28, especially planned for Women's Institutes and preference will be given to W.I. enrolment for the convention.

The B.C. Women's Institutes have been interested in a Home Improvement contest, having 79 entries. The provincial winners will be announced and the prizes awarded. Some locals are taking an interest in Girls' Club work, now supervised by Miss Echo Lidster, and leadership is provided by the W.I. in sewing. Mrs. Gummow reported that the W.I. Memorial Scholarship fund is now over \$4,000 and close to the objective set. This fund is used to help rural girls enter the university to study in the field of Home Economics.

In the world-famous Empress Hotel I chatted with Mrs. Alfred Watt, who has won renown for her work in connection with the Associated Country Women of the World and for carrying the idea of the Women's Institutes to Great Britain, where it has become

firmly established. Mrs. Watt attended the conference of the A.C.W.W. in Amsterdam, Holland, last September, where she retired from active work in the organization. She is today the honorary president. She is taking a well-earned rest and the opportunity to look after business affairs in her home province. During war years Mrs. Watt helped launch in New York the movement to send American garden seeds for British soils. That movement too went on to splendid achievement.

To be convinced that spring comes in March at the West coast, friends told me that I should see a field of daffodils in bloom. Camera in hand, I boarded a Gordon Head bus out of Victoria and arrived at the cottage of Mrs. E. W. Darcus on Tyndale Road. I found Mrs. Darcus at work in a plot on her two and one-half acres of land. The plot of blossoms made a gallant showing as adjacent fields were bare. She gave me a bouquet of the daffodils, pointing out that they were well named, First In The Field. I was not surprised to learn that she had won a first prize for



Mrs. Nellie L. McClung at her Lantern Lane home.

her display at the Victoria Horticultural Society 1947 Daffodil Show. She had come, she told me, straight from Ireland and located on her little garden property, one acre of which is devoted to the growing of loganberries. I noted that flower growing seemed to require considerable back-bending work and made some laughing remark about the possibility of taking up that type of work upon retirement. In reply she cautioned against "taking retirement too early—not before one was actually ready for it."

Further along the winding highway, bordered heavily by evergreens which afforded that day an effective back drop to blossoming cherry and plum, stands the home of another beloved Canadian woman, Nellie L. McClung, author of many books. At Lantern Lane, on a later day, Mrs. McClung chatted over teacups with Miss Nora Banks, of London, England, an exchange teacher now stationed at Edmonton, and me. On the point of proper time for retirement, Mrs. McClung had some decided views. "Some of the most unhappy men and women I see here at the coast, are those who have waited too long for giving up their work and have failed to provide themselves with interests and hobbies for their declining years. They come, and for a while they seem to enjoy the change and the climate. Then it seems to occur to them that they are here waiting for the end. They are unhappy and come to hate the place and usually go back to be near their family, the old home and friends."

WE chatted about Canadian writers and new books. Mrs. McClung keeps abreast with what various writers in Canada are doing and she made many enquiries concerning former newspaper and writing friends in Winnipeg. Two of Nellie McClung's earlier books, *Sowing Seeds In Danny* (published first 40 years ago) and *Clearing In The West*, are now available in reprint editions.

When we enquired if she was now engaged at any writing she remarked: "No, I'm not. I guess I miss the interruptions. I did most of my writing when I was the busiest with housework and raising my children. I suppose I am one of those people who needs interruptions to spur them on to work."

Gardens, writing and books are frequently to be found as combined interests in an individual. Such is the case with J. W. Winson, who lives at a delightful spot known as Wildwood, near Huntingdon, which



Mrs. E. W. Darcus, also of Gordon Head, B.C.

is a port of entry to the United States. Mr. Winson is a naturalist of note. He contributes a regular feature to the Vancouver Province. He is also chairman of the Fraser Valley Union Library Board. Mr. and Mrs. Winson came from England 39 years ago and for 30 of those years he has written of his observations and work in growing many varieties of flowers, shrubs and trees. His is truly an "international garden" as some two acres lie in American territory and the remaining ten lie in Canada. It is located on a high plateau. At one spot there are two stones placed close together in the garden and visitors delight to stand with a foot on each and be able to say that they have stood actually with one foot in the United States and the other in Canada.

Selections of Mr. Winson's newspaper articles under the pen name "Wildwood" have been published by Warwick and Chapman in book form under the title *Wildwood Trails*. An earlier book, *Weather and Wings*, is still used as supplementary reading in B.C. schools. Mr. Winson was away at the time of our visit. Mrs. Winson took a keen delight in showing us about the garden. Standing by the fence we could look east and west and see the line of clearing cut through the high trees, marking the international boundary between Canada and the United States. Every six years men come to cut down new growth so that always the boundary will be clearly defined. There is a lovely view from that garden. To the south lies a valley stretching into the United States. To the north one may look down upon tidy orchard-lands in Canada stretching off toward the Fraser River. Truly it is a spot to bring inspiration to a naturalist and writer!

Transubstantiation

By NAN MOULTON

*The waiting trees, communicant.
With dusty feet, like pilgrims gaunt,
Drink, reverent, of the rain's bright slant.
And in an hour, beyond belief,
The wine of rain is bud in sheaf,
And rosy thorn, and good green leaf.*

FIRST AID FOR FURNITURE

By
MARION R. MCKEE

The beauty of marred furniture may be restored by careful repair work

IN spite of all the good intentions in the world regarding our household furniture, we all too often find scratches, stains, heat marks, warping and other unsightly blemishes marring an otherwise lovely finish. It is then necessary to undo the harm that has been done.

Since the prevention is easier than the cure, every care must be taken to treat furniture with due respect to help preserve its beauty. To avoid those ugly white rings caused from placing too hot dishes on the table, use asbestos or hot dish pads under each dish. These pads are reasonable in price, are pretty to look at, and easily earn their keep by protecting the table. The use of coasters under damp glasses and jugs prevents a water ring which is awkward to remove. To prevent stains any spilled liquid should be quickly wiped dry with a clean cloth.

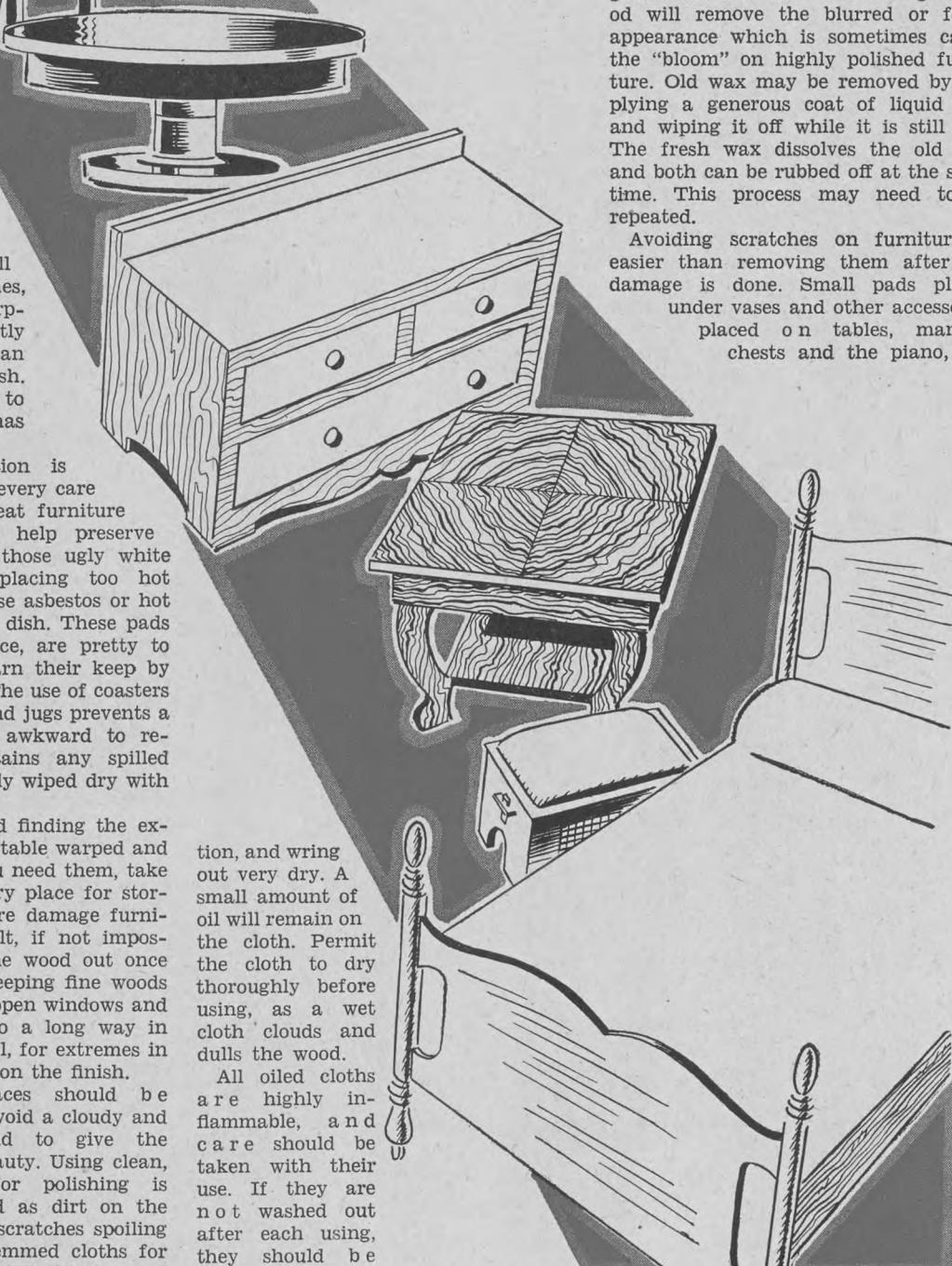
If you wish to avoid finding the extension leaves to your table warped and out of shape when you need them, take care to find a cool, dry place for storage. Heat and moisture damage furniture, and it is difficult, if not impossible, to straighten the wood out once it is badly warped. Keeping fine woods away from radiators, open windows and direct sunlight will go a long way in keeping them beautiful, for extremes in temperature are hard on the finish.

All polished surfaces should be cleaned regularly to avoid a cloudy and dull appearance, and to give the furniture a lasting beauty. Using clean, non-linting cloths for polishing is strongly recommended as dirt on the cloth may cause tiny scratches spoiling the surface sheen. Hemmed cloths for dusters are the most desirable because they will not ravel and stick to the surface.

A dust cloth will hold the dust and dirt much better if treated with oil and will do a better cleaning job. There are two ways to treat a cloth with oil; one is for dusters used on non-waxed woods and metal surfaces; one for waxed woods.

For the non-waxed wood dusters place one teaspoon of raw linseed oil or furniture polish in a quart jar or can with a tight cover. Turn the jar until the oil is spread evenly over the inner surface, then put the cloth in the jar and leave overnight. The oil will be evenly distributed throughout the dust cloth in the morning. The important thing is that there should be very little oil on the dust cloth and that it should be evenly distributed. Be sure that this duster is not used on waxed surfaces.

A DUSTER for waxed surfaces may be made as follows. Add one tablespoon of raw linseed oil or furniture polish to one quart of warm water. Dip the dust cloth, which has been wrung out of the warm water, into this solu-



tion, and wring out very dry. A small amount of oil will remain on the cloth. Permit the cloth to dry thoroughly before using, as a wet cloth clouds and dulls the wood.

All oiled cloths are highly inflammable, and care should be taken with their use. If they are not washed out after each using, they should be stored in a covered glass or tin container.

To some the idea of washing furniture with soap and water will be unheard of, but it is true that every now and then a good soap and water wash is just the thing to remove old dull films of wax. Wash the wood with a soft cloth wrung from warm water which has a good, mild soap suds. Be sure to rub in the direction of the grain. When the dirt has been removed dry with a clean, soft cloth.

A soap jelly may be whipped to a dry lather and used in the same way. The soap jelly is made by shaving a cake of neutral soap in thin pieces and cooking in one quart of water until thoroughly dissolved. Let it set overnight to form a jelly. Place two tablespoons of this jelly in a mixing bowl, add two tablespoons of warm water, and whip to a dry suds with a rotary egg beater. Any extra soap jelly may be stored in a jar until it is needed. When using soap and water on wood it is necessary to work rapidly to prevent the moisture from raising the grain or softening the glue in the furniture.

Another furniture wash is made with three tablespoons of linseed oil, one

tablespoon of turpentine, and one quart of hot water. This is mixed thoroughly. Dip a clean, soft cloth into this solution, wring dry, and wash a small area, drying immediately after with a soft cloth. Clean the entire surface this way, polishing by rubbing with the grain of the wood. This cleaning method will remove the blurred or foggy appearance which is sometimes called the "bloom" on highly polished furniture. Old wax may be removed by applying a generous coat of liquid wax and wiping it off while it is still wet. The fresh wax dissolves the old wax and both can be rubbed off at the same time. This process may need to be repeated.

Avoiding scratches on furniture is easier than removing them after the damage is done. Small pads placed under vases and other accessories placed on tables, mantles, chests and the piano, will

The dye used should be as dark as the stain on the furniture or even darker since it may become lighter in the refinishing process. When the dye is dry use another small brush and fill in the groove with white shellac. Any surplus is wiped off, but the filling is allowed to dry. If there is a rough spot left when it dries work it smooth with powdered pumice and linseed oil. The wood is then wiped clean and the whole surface is given a good coat of wax or furniture polish and rubbed.

Gouges in furniture may be made less noticeable if they are first filled with plastic wood which has been stained to a matching color. When the plastic wood is set go over the surface with pumice and oil, clean, and then finish with a coat of wax or furniture polish. Plastic wood may be bought at most hardware and paint stores.

Sometimes a sharp, heavy object may strike a polished surface and pack down a few layers of wood causing a dent. If the fibres in the wood are not broken it may be possible to remove these blemishes by applying heat and moisture. This is done by moistening several thicknesses of brown paper or blotting paper in hot water and placing them over the dent and applying heat with a heated iron. The warm moisture causes the wood to swell and to raise to its normal position. Extreme care must be taken to see that the iron is not too hot, or the wood will be damaged. Repeating the process may be necessary, and the work should be done slowly and carefully.

White spots on polished surfaces are caused by water, hot dishes or alcohol such as in perfume, and are much easier to remove when they are fresh. There are several ways in which these spots may be removed.

Cover the offending spot with salt and pour on as much olive oil as the salt will absorb. Leave this overnight. In the morning remove the salt by soaking it with the olive oil again, and follow up with a brisk rubbing with a cloth saturated with oil.

Another method uses turpentine. Moisten a pad or cloth with turpentine and apply it to the spot. Rub immediately with a cloth saturated with linseed oil or furniture polish. This process should be repeated until the spot disappears, remembering to work with speed, since the turpentine will dissolve and spoil the finish if allowed to remain on for even a short length of time.

WHITE spots may also be removed by rubbing the spot with a pad moistened with denatured alcohol and squeezed almost dry. Pat it gently on the spot. Do not leave on long as the alcohol will soften the finish. Quickly follow this application with a cloth saturated with linseed oil, olive oil, or furniture polish. Speed is very important to get the best results.

Dark spots may occasionally mar your furniture and these are usually removed by bleaching them with a saturated solution of oxalic acid. This solution is applied with a brush or cloth and is allowed to stand a few minutes. The spots are then washed with weak ammonia water. The process may have to be repeated. This method is more effective on bare wood before any finish has been applied. If the wood is already finished try this treatment on an inconspicuous place to see what effect it will have on the finish. The oxalic acid solution is made by dissolving as many of the crystals (about two tablespoons) of

the acid as possible in a pint of luke-warm water. Put this into a bottle, cork it tightly, and use as needed.

In the dry climate of our western prairies, furniture sometimes shrinks weakening the glue and loosening the joints. The pieces must then be taken apart and the old glue removed by sandpapering. Fresh glue is then applied to both surfaces and allowed to dry until it is sticky. Both the glue and the wood should be warm when applied. The pieces are then put together and pressure applied while the glue dries. A home-made clamp is easily made by first protecting the furniture surface with cloth pads, and then applying a rope tourniquet. Remove the rope when the glue is dry, which is usually about 24 hours.

Taking care of your furniture by keeping it clean, polished and repaired will reward you throughout the years. New furniture is expensive and often unnecessary when the old is treated with respect. There is something about the beauty and richness of the well kept table, chair or other piece which gives grace and dignity to a room.

Hints

Odd but useful

A brightly colored soap shaker filled with tiny bells from the five-and-ten-cent store makes a "band instrument" that will delight a youngster. A few other items such as cymbals, a drum or triangle may interest the children of a family or of a school to form a little band of their own.

To brighten tarnished gold jewelry, rub it lightly with a tooth brush dipped in ammonia and then baking soda. If you have a metal neck chain or bracelet which darkens the skin, try giving the portion of it that touches the skin a thin coating of clear nail polish.

A file box and file cards makes a good place for addresses, birthday dates and anniversaries. Old address cards can be easily replaced when the need arises. Such a system makes it easy for you to find the name quickly when you want it.

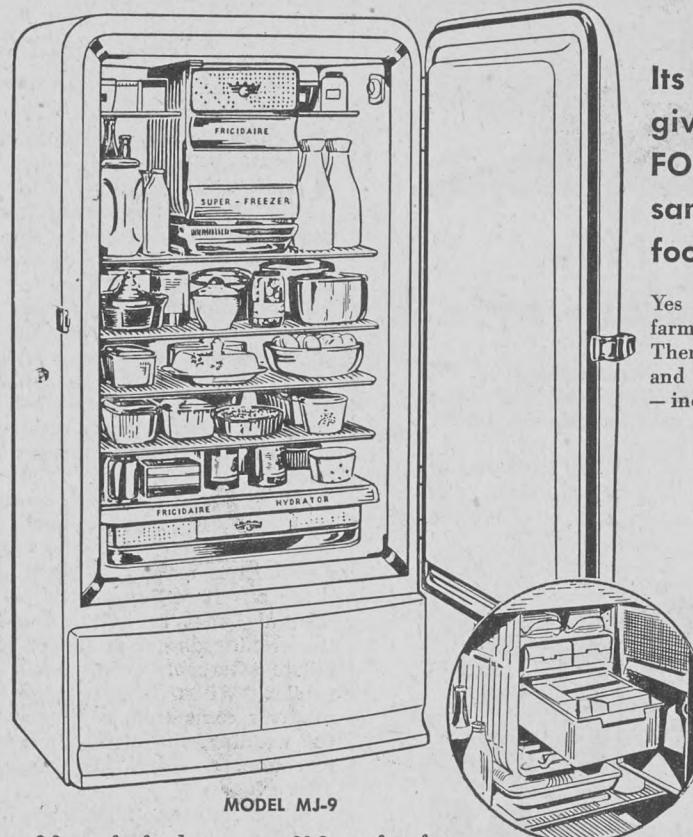
When having a picture framed possibly you have puzzled over the selection of the right type of frame. Oak, ash and gold frames look best on pictures with yellowish and brownish tones; black, silver, and grey frames on black and white or grey pictures; cherry, mahogany, cream-colored and gold woods look well on most colored pictures.

If you have some old wide picture frames which were used on old fashioned pictures, which you no longer want to hang in your rooms, try giving them a new finish. You can do this easily by using a white, off-white or a soft grey paint. You will find the old frames so treated effective for the framing of a modern picture or a gay print. The next time you visit an art gallery or studio you may have the chance to see to what good use these old frames may be put.

Wrapped in cellophane—that's the way most lamp shades come these days. Here's a tip. Remove the cellophane once you use the shade. Heat from the lamp bulb and the changes in the air cause the cellophane to shrink. When it shrinks, it pulls on the frame and bends it out of shape. Besides that, dirt sifts in between the strips of cellophane and leaves streaks that are sometimes impossible to remove.

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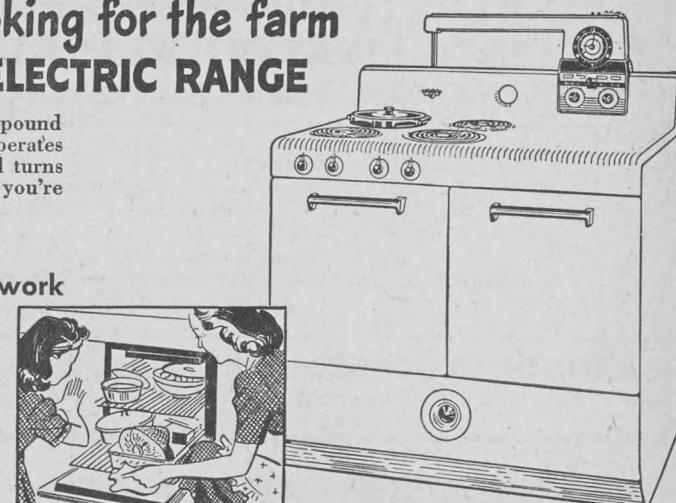
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By RUTH MEREDITH

Tempting foods served in a lovely setting make this an occasion to be remembered

If there is to be a wedding reception at your home soon, you will be starting to make plans for the big day. Everything must be as nice as possible in honor of the bride, and the food, service, and table setting should be the very best, as nothing less will do.

In planning a reception the type of service depends upon the number of guests present. For a large group a reception tea, or a buffet supper would be best, while a sit-down meal would be ideal for a small group of the bride's and groom's intimate friends and relatives.

If the service is performed before noon the reception is usually called a breakfast, though if eaten after ten o'clock it is usually in the form of a luncheon. It will probably be a substantial buffet or sit-down meal, and the evening dinner or supper following a late afternoon wedding will be very similar. When intimate friends and relatives come from some distance for the wedding, and drive home after the reception, a substantial meal is the answer.

In setting the table use only your very best white linen, lace or damask cloth, and matching napkins. Good china, which is not of the gaily colored pottery type, is harmonious with the slightly formal air of a wedding reception, while crystal goblets or cut glass

tumblers complement the fine china and linen. The best silver will be polished and shone to a gleaming brightness in readiness for the occasion.

The chief decoration on the reception table will be the traditional tiered wedding cake. After the guests have been served the bride and groom together cut the first slice of the cake, and then the cake is cut into pieces and served to the guests, or put in small boxes to be given to each guest "to dream on." Often the entire top tier of the cake is removed intact for the bride to keep and the second layer is served.

Some floral arrangement is desirable on the table, since the wedding cake will be cut and served. Feathery white lilacs, white roses, or whatever flower preferred may be arranged in a lovely centerpiece by a florist or by some gifted friend. If the reception is in the evening, white candles in crystal or silver holders may grace each side of the centerpiece adding dignity to a lovely table.

In planning your menu, choose one which is not too elaborate to handle. Simple menus, artfully served, are always in the best form. The following menus are suggested for different types of receptions. Changes are easily made in these, and foods may be added or substituted according to what you wish.

Early Wedding Breakfast

(Sit-down or Buffet Style)
Half Grapefruit Garnished with a Large
Strawberry
Creamed Chicken and Ham
Hot Corn Bread or Baking Powder Biscuits
Marmalade or Jam
Wedding Cake in Boxes Coffee

Midday Wedding Breakfast

(Sit-down Style)
Grapejuice and Ginger Ale Cocktail
Sliced Chicken and Tongue
Creamed Peas and Mushrooms
Cucumber Salad with French Dressing
Bread and Butter Fingers
Strawberry Shortcake
Wedding Cake Coffee

Midday Wedding Breakfast

(Buffet Style)
Sliced Baked Ham and Turkey
Tossed Vegetable Salad
Asparagus with Creamed Cheese Sauce
Hot Rolls
Ice Cream and Crushed Strawberries
Pound Cake Coffee or Tea
Wedding Cake Punch

Afternoon Wedding Tea

(Buffet Style)
Rolled Asparagus Sandwiches
Cucumber and Lettuce Sandwiches
Minced Tongue and Relish Sandwiches
Punch Tea
Wedding Cake Mints

Buffet Wedding Supper

(Late Afternoon or Evening)
Shrimp and Egg Salad
or
Veal and Celery Salad
Rolled Watercress Sandwiches
Egg and Olive Pinwheel Sandwiches
Brown Bread and Cheese Diamond Sandwiches
Open Faced Ham Sandwiches
Punch Coffee
Wedding Cake Salted Nuts

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Yeast Bread and Buns

Fresh from the oven they are family favorites

TO some the making of bread and buns may be an old story, while to others it may be a new experience. Contrary to most beliefs it is not difficult, and few household occupations bring more acclaim from a hungry family than some fresh homemade bread and buns.

In making bread the best results are obtained when the rising period is short. With the new and efficient fast-rising yeasts on the market the time used is shortened and the quality of the bread is improved. Yeast may be bought either in the compressed cake form, or in a fast-rising dry yeast form, both having directions on the package on how to obtain the best results. Be sure the yeast is fresh to get the proper rising in the bread. There are yeasts which may be stored for some time under proper conditions, and the length of the storing time is usually stated on the package.

Raised Sweet Rolls (Basic Recipe)

1 c. scalded milk	2 T. lukewarm water
5 T. granulated sugar	1 egg, well beaten
1 tsp. salt	4 c. sifted all purpose or bread flour
4 T. shortening	
1 compressed yeast cake	

Combine the scalded milk with the granulated sugar, salt, and shortening and cool until lukewarm (about 85 degrees Fahr.). Meanwhile soften the yeast cake in the lukewarm water, then stir into the first mixture. Next add the well beaten egg, and as much flour as can be stirred into the dough without kneading. Turn on to a lightly floured board, form into rolls, and arrange in greased pans. Cover with a clean cloth and let rise in a warm place (75 to 85 degrees Fahr.) until nearly double in bulk. Bake in a hot oven of 425 degrees Fahr. for 12 to 15 minutes. Remove from pan, brush with melted butter, and cool on a cake rack. Makes two dozen medium-sized rolls or two medium-sized loaves of bread. In making half of this recipe use one-half a beaten egg.

Date Coffee Ring

½ recipe raised sweet roll dough	½ tsp. lemon extract
½ c. cold water	1 tsp. vanilla
½ c. granulated sugar	1 c. confectioners' sugar
½ tsp. salt	1 ½ T. boiling water
1 T. flour	¼ c. chopped walnut meats
1 c. pitted dates	

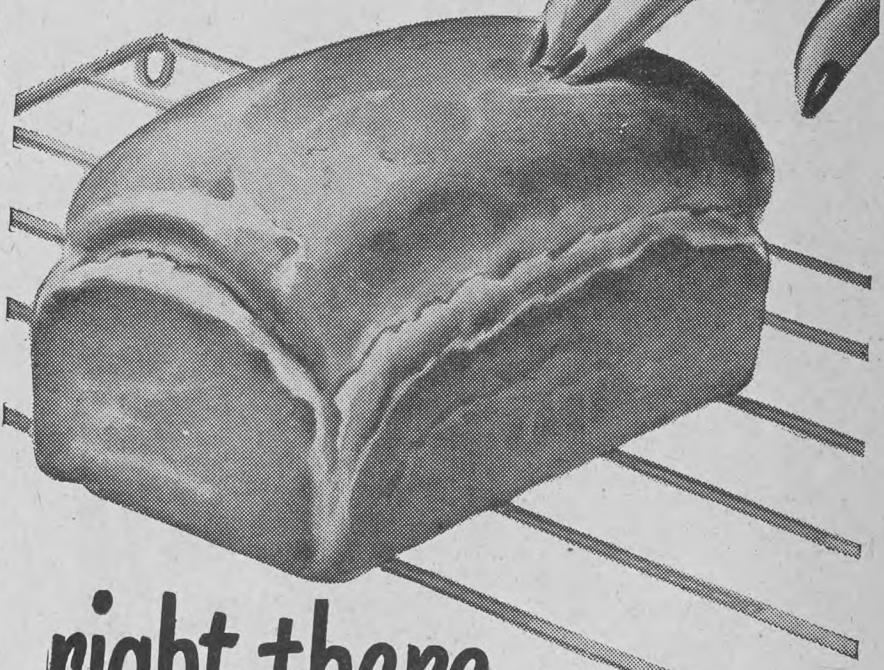
Make the raised sweet roll dough. With the cold water mix the granulated sugar, salt, flour, and dates cut in thirds. Simmer about 15 minutes until thick, stirring occasionally. Cool; add lemon extract. Knead the dough until easily handled, then roll one-quarter inch thick, spread with date mixture, and roll up like a jelly roll. Shape into a ring in a nine-inch greased pie plate. Cut slashes through the top surface at two-inch intervals, using scissors. Cover with a clean cloth and let rise until nearly doubled in bulk. Bake in a moderate oven of 375 degrees Fahr. for 50 to 60 minutes. While hot spread with the combined vanilla, confectioners' sugar, and boiling water. Top with nuts.

Pecan Rolls

½ recipe raised sweet roll dough	½ c. water
¾ c. brown sugar	1 c. pecan halves

Make the raised sweet roll dough. Boil the sugar and water together five minutes. Place two teaspoons of this syrup in the bottom of each section of greased deep muffin pans and arrange four pecan halves in each. Turn the dough on to a lightly floured board and knead until it can be easily handled. Then roll it out onto a sheet half an inch thick, cut into two and one-quarter inch rounds, form into balls by folding the edges under until the top is smooth. Place one ball in each section of the muffin pan, cover with a clean cloth and let rise until nearly double in bulk. Bake in a hot oven 400 degrees Fahr. 12 to 15 minutes. Remove at once from pan and cool, syrup side up.

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Those Pesky Lamps

Ideas for easy cleaning

OF all the chores around the house, doing the lamps is one of the most unpopular. It's a messy job and something you can't avoid—unless you are one of the fortunate minority linked up with electric power schemes.

Did you ever figure out how much time is used up in the course of a year by care of the lamps? It varies according to the circumstances, but here is a rough estimate. When the days are long (May, June, July, August) you may seldom need to light up, and once a week does the trick.

During winter months you probably have to do the lamps three times a week, especially if you have a family who are great readers. In spring and fall twice a week may be plenty. Generally speaking, 90 times a year would be quite common. Allow five minutes for each lamp for filling, trimming, and polishing the chimney. That means 450 minutes (90x5) or over seven hours even if you only did one lamp thoroughly. And what couldn't you do with that time?

As with any other disagreeable work, it pays to look at it with a critical eye to see if you can do it more easily and in less time. Are you using a sufficient number of lamps? One or two in constant use may always seem to need filling. If you had double the number the job would not come around so often. Is every member of the family careful not to leave lamps burning in an empty room?

IT saves time to keep in one place all the cleaning equipment needed for the lamps, so it can be picked up without delay. Work on a surface where the light is good, and protect it with layers of newspaper. Collect all the lamps, remove the glasses, unscrew the burners and make sure they are placed so they can't fall off.

Fill each bowl in turn, allowing an inch at the top for expansion. You can avoid spills by using a small funnel shifting it from one bowl to the next, without putting down the can. Replace the burners and check each wick. A well-trimmed wick means a bigger, better flame with no spikes to blacken the glass. Anything that reduces work is worth considering.

The trick with wicks, no matter whether straight or circular, in lamps or stoves, is to have a smooth, flat surface. To get this, pat down the wick, either with soft paper wrapped around your finger or what is better, the back of an old toothbrush (not the bristles). This removes the bits of loose carbon which would make a ragged flame. Never pull up the wick or rub it back and forth, if you want good results.

PERIODICALLY, snip off the corners of the wick with a pair of scissors to produce a spikeless flame. Finally turn down the wick a bit and with the bristles of the brush, remove any remaining carbon sticking to the metal part. Use the bristles to clean off the ventilating holes on the burner. Wipe off the bowl with soft paper or cloth.

The quickest way to do the chimneys is to hold each over steam, and to polish with soft paper. Always have a piece of paper in your left hand so there will be no finger marks to remove from the outside of the glass.

To keep kerosene lamps from developing a strong smell, boil the burners two or three times a year in a solution of water and washing soda. This removes the film of carbon and oil and makes the lamps more pleasant to use. At all times use only the best quality of oil. Poor grades do not give a good flame and the glasses become cloudy in no time.—M. M. S.

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Laundry Suggestions

Tricks in washing curtains and colored fabrics

By MARGARET M. SPEECHLY

work crosswise or you will get a wavy effect that shortens the curtains.

If the material has large or small dots, lay it face down on a thick bath towel and press gently with a moderate iron. Too much weight flattens the dots. For rayon and mixtures of rayon and cotton see that the iron is not too hot.

In using curtain stretchers, set the frame to the over-all measurements of the curtains. Pin the four corners first, then go to the centre of each side and work across from side to side and end to end. Do not use a stretcher with pins if you do not wish the edges to show the pin marks.

Stretchers are now made with a rod at each end into which you can slip the hems. The wet curtains are put on it singly and dry in no time. I get the same effect by hanging net or lace curtains on the rod in the window, with another rod at the bottom. A weight at each end keeps the material straight.

Nearly all washable curtain fabrics on the market shrink a certain amount. If the manufacturer does not state on the label the probable shrinkage you should buy extra material to be safe. In making up each curtain baste a tuck near the top heading. No one will see it and you can let it out before laundering.

Ask for Labels

Make a point of asking for informative labels. Few are to be found in the stores, but if consumers persist in enquiring for details about shrinkage, finishes, laundering and guarantees, merchants and manufacturers will listen. Keep on asking, even if it takes time to get results.

Follow the same plan when purchasing colored cottons, rayons and other washables. Nobody can afford to buy materials that are not sun-fast and tub-fast because such things soon lose their new look, are a pest on wash day and have to be replaced.

Note that the manufacturer who is proud of his sun-fast, tub-fast, pre-shrunk fabrics never fails to tell you about his products. In dyeing most of the color attaches itself to the fabrics. Any surplus is rinsed out. If this is not done in the factory it comes out on wash day or rubs out on your underwear.

In washing colored things, do your part by treating them so they will retain their fresh, new appearance as long as possible. Remember that the enemies of even the best dyes are hot water, strong soaps, rubbing, and direct sunlight.

Start by preventing clothes from getting over-soiled. Grime never fails to dim bright colors and so does the hard rubbing required to dislodge it. Treat collars, cuffs, and the seats and knees of play clothes with heavy suds beforehand.

Soften hard water for both the washer and the rinses so there will be no soapy curds to dull the colors. Never use strong soaps or those containing free alkali, as they dim colors.

Avoid the Sun

Make it a rule to hang up colored things at once rather than leave them in a wet heap in the basket. Turn inside out and hang out of the direct sunlight. Put up a line in the shade or use a rack which can be moved. Place rayon garments on hangers when possible.

In ironing be careful that the heat does not injure the colors. Rayons look fresher if ironed on the wrong side. Test new material by using the iron on an inconspicuous part.

Points in Ironing

For ironing use a padded table, not a board, and with your fingers spread out the fabric smoothly. Start at one end and take long, even strokes with the iron, parallel with the selvage. Never



OUR crisp sheer curtains will retain their original freshness far longer if you give them the right treatment. This is thrifty because you get greater value for your money, and you will not have to make new ones so soon.

Dust and grime are the things that rob draperies of their new look. Not only do they make them dingy in appearance, but they definitely weaken the threads. Further damage is caused by the action of direct sunlight and the odd shower of rain.

Do all you can to prevent curtains from picking up dirt. Keep the sills and panes dusted, don't let the curtains flap against the screens, use tie-backs or secure with spring clothes pins when you have the window open.

Dirt Wears Them Out

As a matter of economy, wash your curtains before the dirt has a chance to become embedded. When you take them down shake them gently to remove the loose dust. At this point, jot down the measurements of the curtains, both length and width, if you intend to dry them on stretchers.

Soak for about half an hour in cool, softened water to loosen the dirt. For washing use lukewarm water with mild soap to make a rich suds. A second suds may be necessary to thoroughly flush out the soil. Handle the wet fabric gently and when putting it through the wringer, support it with your hands to reduce the strain on the weave.

Never do the curtains with the weekly wash because heavier articles tend to tug at delicate materials and even tear them. I like to use a tub and a hand-plunger to draw the suds through the meshes. The plunger does a good job of the rinsing too. Give at least two rinses. Never twist or wring curtain materials as this damages the yarns.

Some cottons need a touch of starch to restore their original crispness, but net, lace and rayons do not require any. Do not use starch for fabrics with large, fluffy dots.

Rayons and colored cottons should be rolled in a bath towel before ironing. Plain cottons can be dried on a tight line but do not secure with clothes pins as these are likely to pull the material out of shape.

Points in Ironing

For ironing use a padded table, not a board, and with your fingers spread out the fabric smoothly. Start at one end and take long, even strokes with the iron, parallel with the selvage. Never

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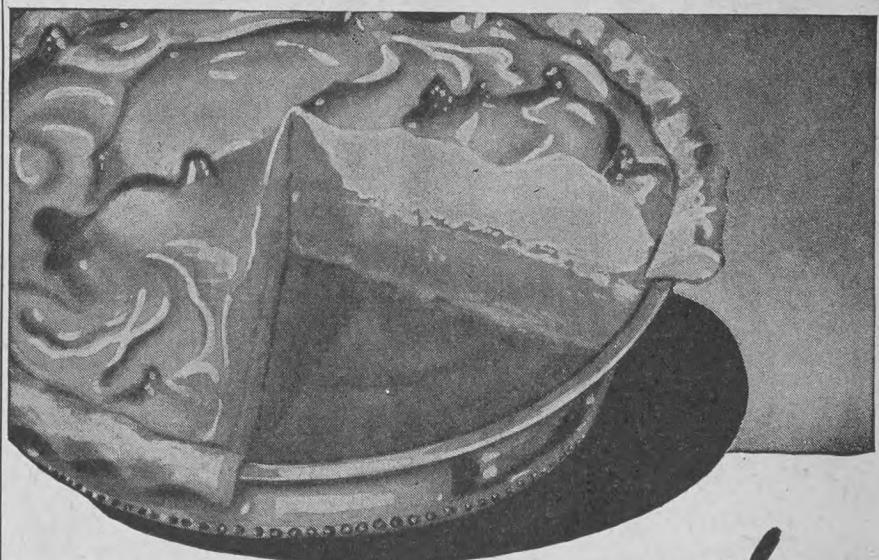
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Good Looking Tips!

Solving minor beauty problems makes for major good looks

By LORETTA MILLER

The upper line of the brows need only be groomed, removing only the necessary hairs to give shape.

Question: I simply cannot afford to buy the very expensive creams which, I am told, are necessary to lubricate a much, much too dry skin. Would it be possible for you to suggest an oil or other lubricant? I am not young, but I do want to look as young as possible since I must go to work every day. I feel sure there must be something for my purpose.

Answer: Pure English lanoline which you can purchase in your local drug stores is an excellent lubricant. It does not have a very pleasant perfume, but perhaps you can add your own fragrance to the lubricant. The perfuming is done this way: Place a few drops of oil of lavender or other scent in a very small bottle. Uncork the bottle and place it upside down in the lanoline. Let this stand for two or three days before removing the bottle. The fragrance will have penetrated the lanoline and it will be very pleasant to use. After washing or cleansing the facial skin, smooth on a liberal coating of lanoline, allowing it to remain on overnight or as long as possible during the day. Use the lanoline as often and as generously as possible. Lanoline is a fine lubricant and one of the very few substances which will penetrate the skin.

Question: What shape should the toe nails be cut so that ingrown nails will not appear? Is it best to use a file or scissors on the nails?

Answer: Use a pair of nail clippers, preferably, or scissors, and clip or cut the nail straight across so that the end is almost square. Although best to put troubled feet in professional hands, much of the discomfort of an ingrowing nail can be eased by forcing a very small piece of cotton under the offending nail corner. Use an orangewood stick for this, then after the soreness is removed, clip off the minute portion of the nail causing the trouble. A file may, of course, be used for smoothing the nail edge.

Question: I have been told that various home-made aids could be made for checking oily skin. Do you know anything about the use of egg white as a mask? Is lemon juice better? Which should I use?

Answer: White of egg is an old standby and has long been used as a corrective aid to oily skin. Don't overlook the various suggestions offered in these columns in previous months, however. To use white of egg, prepare the mask by placing the egg white in a small, clean bottle and to it add a tablespoonful or so of pure rose water. Shake slightly. Then after scrubbing the face with a well-lathered complexion brush or wash cloth, rinse off all soap, dry the skin and smooth on the egg white mask. Be especially liberal with the application over the nose, forehead, chin. When the first application is dry, make another. Let that dry, then make a third application. Let this dry and allow the triple coating to remain on for at least one hour. Do not talk, smile or change the facial expression during this time. The egg white forms a stiff mask and by holding the face immobile a double purpose is gained: A fine freshening mask and oily skin corrective aid. Lemon juice is less effective.

Question: I like to use an eye wash after being out of doors, especially on windy days, but many such preparations are very expensive. Is there one I can make at home? Is it best used with an eye cup or an eye dropper?

Answer: A most effective eye-bathing

lotion can be made at home. Measure one-half pint of boiled water and place in a clean jar or bottle and to this water add one level teaspoonful of pure table salt (the water should be boiled for 10 minutes and *then* measured). A clean eye-cup is advisable for bathing the eyes with this liquid. The salt and water in this proportion makes the solution almost the same saltiness as tears which, as we know, is a perfect cleanser for the eyes.

Question: My figure is fine except for my hips and thighs which are all too likely to get heavy. Dieting only makes my face thin and doesn't have much effect on my below-the-waist weight. Is there a solution to my particular problem?

Answer: The pendulum-kick exercise is by far the most satisfactory for slenderingizing the hips and thighs. In fact it was intended for this double-purpose.

This exercise should be repeated two, three or four times each day and must be done for at least one week before results can be seen. Thereafter, results are speedier. Stand erect, holding fast to the back of a chair, a door jamb, or table. Then swing the right leg up as high as possible. Without touching the floor swing it back and up as high as it will go. This should be one unbroken movement, just as a pendulum. Put a lot of kick into this movement. Swing the right leg forward 25 times, backward the same number, of course, and repeat with the left leg. Be sure to stand erect while doing this exercise and you will notice the pull on the abdomen, too, while the hips and thighs are being thinned.

Is your problem answered today? If not, perhaps it will be in one of the forthcoming articles. Now is the time to get in trim!

Striped Sleeveless Pullover

By ANNA DEBELLE

SIZES 14, 16, and 18 years are all included in the one pattern for this versatile and most becoming pullover. As you can see, it is a perfect team-mate for a tailored blouse and with a new-length skirt it makes a complete costume. Try it also with the blouse and slacks or shorts—a nice summer idea. Pattern No. K-104, price 20 cents. Address orders to THE NEEDLEWORK DEPT., The Country Guide, Winnipeg, Man., and enclose 20 cents extra for your copy of GOOD IDEAS, our catalog of needlework.

No. K-104

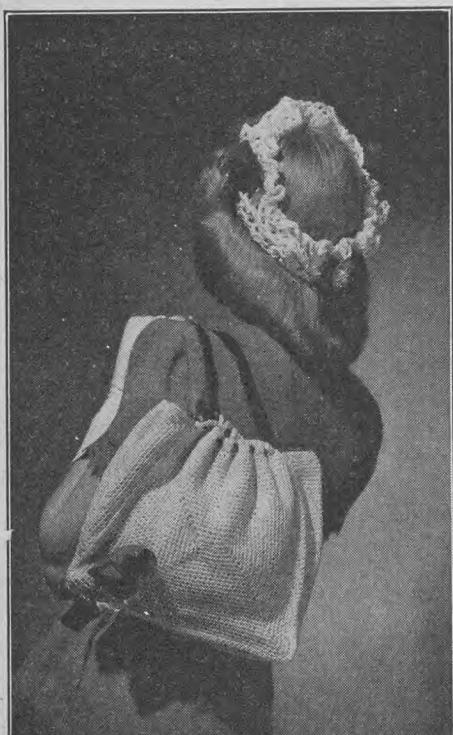


Halo Hat and Bag

By ANNA DEBELLE

A CIRCLE of crochet around your head, finished with a bright, gay flower on either side makes a Halo Hat you wear with pride and pleasure. And to make the effect complete, we include in the pattern an easy-to-make purse trimmed with a flower to match the two on the hat. Both are in Pattern No. C-292, price 20 cents. Address orders to THE NEEDLEWORK DEPT., The Country Guide, Winnipeg, Man., and enclose 20 cents extra for your copy of GOOD IDEAS, our catalog of needlework.

No. C-292



Cocoanut Cloud Cake



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COCOANUT CLOUD CAKE

3/4 cup shortening	4 1/2 tsps. Magic
1 1/2 cups sugar	Baking Powder
3 eggs	3/4 tsp. salt
3 cups sifted cake flour	1 cup milk

1/2 tsp. almond extract
1 tsp. vanilla extract
Boiled Frosting
Cocoanut

• Cream together shortening and sugar. Add eggs, 1 at a time, beating after each. Sift together flour, baking powder and salt; add alternately with milk to creamed mixture. Add vanilla and almond extracts. Pour into 2 greased 9" layer pans. Bake in moderately hot oven, 375° F., 25 minutes. Cool 5 minutes. Remove layers from pans; cool on wire rack. Spread frosting between layers and on top and sides of cake. Sprinkle generously with cocoanut.

Boiled Frosting: Boil together 1 cup sugar, 1/3 cup water, and 1 tsp. vinegar to 238° F., (or until syrup spins long thread when dropped from tip of spoon). Beat 2 egg whites stiff; gradually add syrup, beating constantly until frosting holds shape: Add 3/4 tsp. vanilla extract;



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Storing Winter Things

Keep winter things safe from insects and summer heat

WINTER is over at last, and we no longer need the heavy clothes, blankets and other items which have helped to keep us warm. It is time to clean and store these articles so they will be safe for the summer.

One of the first things you wish to store will be the heavier quilts and blankets, and these should be thoroughly cleaned beforehand. Cotton quilts, which are firmly stitched, may be washed in soap and water. However, if there is any doubt about their strength and the stitching, it is safer to send them to a professional laundry to be done.

When laundering your wool blankets, choose a warm, sunny day so they may be freshened by the outside drying. Before tubbing the blankets gently shake or brush off the loose dust and dirt. Grease spots on the blanket or on the binding should be removed before laundering with a non-inflammable spot remover such as carbon tetrachloride.

Wash one blanket at a time in your tubs because the work may be done more quickly and easily. Soaking wool will weaken the fibers. Gently squeeze a heavy mild suds in lukewarm water through the blankets until they are clean. It may be necessary to repeat the sudsing once or even twice if the blankets are very soiled. They should then be rinsed several times in lukewarm water to be sure no soap remains in the fibers. Gently squeeze out any excess water, never twisting to remove the water. If a wringer is used be sure to release the tension to prevent matting the fluffy surface of the blanket.

Choose a shady spot outdoors and hang the blankets over two lines so they will dry uniformly and quickly. Turn them at least once during the drying period shaking gently to fluff up the surface. When they are dry they may be brushed with a soft brush to bring up the nap, and the binding should be pressed with a warm iron.

Wrap the blankets loosely, separating each layer with tissue paper and avoiding any sharp creases. Sprinkle generously with moth crystals in each fold as you work. Heavy brown paper or a box may be used to store the blankets making sure there are no openings through which moths may get in. Gummed tape may be used to seal all creases and edges of packages. If the bundles are to be stored in a chest or box, it is a wise precaution to sprinkle moth crystals loosely around the chest even if it is cedar.

Special attention must be paid to the storing of dresses, suits and other winter garments. They should be thoroughly cleaned before they are stored in order to be safe. Some clothes should be dry cleaned first and it is wise to send them to a professional cleaner. The cleaning fluid kills all moth eggs and larvae, ridding the garment of these pests. Other dresses and articles may be safely washed at home in soap and water and hung out to dry in the fresh air.

Airing all clothes before storing is necessary. Choose a clear day with a breeze, and hang the clothes on hangers outdoors in the shade. With a brush, carefully brush out all pockets, creases and folds where moth eggs may hide.

Seal the clean clothes in bags after they have been aired. These bags may be bought at almost any department store and are especially made to keep out moths. Hang the bags in the back of the closet. Clothing may also be wrapped in tissue paper and sprinkled with moth crystals in the same manner as blankets, then stored in chests or trunks.

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2230
SIZES
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2, 3, 4

No. 2443—Simple and attractive cap sleeved shirtwaist dress. Cut in sizes 12, 14, 16, 18, and 20 years, 36, 38, 40, 42, and 44 inches bust. Size 36 requires 4½ yards 39-inch fabric.

2443
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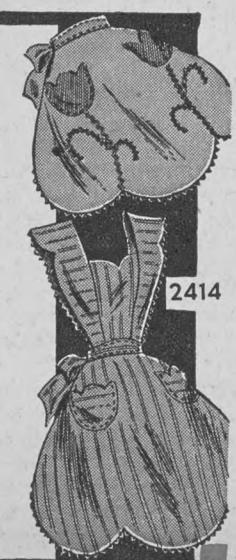
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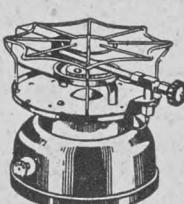
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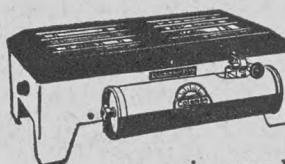
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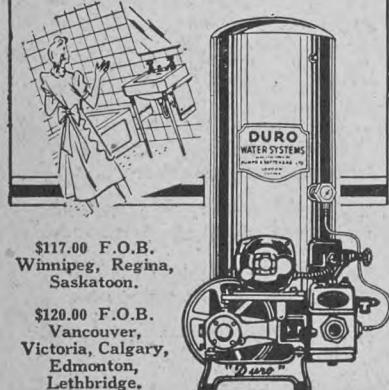
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THE REVOLT OF MOTHER

Continued from page 13

weather. Father did one good thing when he fixed that stove pipe out there."

SARAH PENN'S face as she rolled her pies had that expression of meek vigor which might have characterized one of the New Testament saints. She was making mince pies. Her husband, Adoniram Penn, liked them better than any other kind. She baked twice a week. Adoniram often liked a piece of pie between meals. She hurried this morning. It had been later than usual when she began and she wanted to have a pie baked for dinner. However deep a resentment she might be forced to hold against her husband, she would never fall in sedulous attention to his wants.

Nobility of character manifests itself at loopholes when it is not provided with large doors. Sarah Penn's showed itself today in flaky dishes of pastry. She made the pies faithfully, while across the table she could see, when she glanced up from work, the sight that rankled in her patient and steadfast soul—the digging of the cellar of the new barn in the place where Adoniram 40 years ago had promised her their new house should stand.

The pies were done for dinner. Adoniram and Sammy were home a few minutes after twelve o'clock. The dinner was eaten with serious haste. There was never much conversation at the table in the Penn family. Adoniram asked a blessing, and they ate promptly, then rose up and went about their work.

Sammy went back to school, taking soft, sly lopes out of the yard like a rabbit. He wanted a game of marbles before school, and feared his father would give him chores to do. Adoniram hastened to the door and called after him, but he was out of sight.

"I don't see what you let him go for, Mother," said he. "I wanted him to help me unload that wood."

Adoniram went to work out in the yard unloading wood from the wagon. Sarah put away the dinner dishes while Nanny took down her curl papers and changed her dress. She was going down to the store to buy some more embroidery and thread.

When Nanny was gone, Mrs. Penn went to the door. "Father!" she called.

"Well, what is it?"

"I want to see you just a minute, Father."

"I can't leave this wood nohow. I've got to git it unloaded and go for a load of gravel afore two o'clock. Sammy had ought to help me. You hadn't ought to let him go to school so early."

"I want to see you just a minute."

"I tell ye I can't, nohow, Mother."

"Father, you come here." Sarah Penn stood in the door like a queen, she held her head as if it bore a crown; there was that patience which makes authority royal in her voice. Adoniram went.

MRS. PENN led the way into the kitchen, and pointed to a chair. "Sit down, Father," said she; "I've got somethin' I want to say to you."

He sat down heavily; his face was quite stolid, but he looked at her with restive eyes. "Well, what is it, Mother?"

"I want to know what you're buildin' that new barn for, Father?"

"I ain't got nothin' to say about it."

"It can't be you think you need another barn?"

"I tell ye I ain't got nothin' to say about it, Mother; an' I ain't goin' to say nothin'."

"Be you goin' to buy more cows?"

Adoniram did not reply; he shut his mouth tight.

"I know you be, as well as I want to. Now, Father, look here"—Sarah Penn had not sat down; she stood before her husband in the humble fashion of a Scripture woman—"I'm goin' to talk real plain to you; I have never sence I married you, but I'm goin' to now. I ain't never complained, an' I ain't goin' to complain now, but I'm goin' to talk plain. You see this room here, Father; you look at it well. You see there ain't no carpet on the floor, an' you see the paper is all dirty and droppin' off the walls. We ain't had no new paper on it for ten year, an' then I put it on myself, an' it didn't cost but ninepence a roll. You see this room, Father; it's all the one I've had to work in an' eat in an' sit in sence we was married. There ain't another woman in the whole town whose husband ain't got half the means you have but what's got better. It's all the room Nanny's got to have her company in; an' there ain't one of her mates but what's got better, an' their fathers not so able as hers is. It's all the room she'll have to be married in. What would you have thought, Father, if we had had our weddin' in a room no better than this? I was married in my mother's parlor, with a carpet on the floor, an' stuffed furniture, an' a mahogany card table. An' this is all the room my daughter will have to be married in. Look here, Father!"

Sarah Penn went across the room as though it were a tragic stage. She flung open a door and disclosed a tiny bedroom only large enough for a bed and bureau, with a path between. "There, Father," said she, "there's all the room I've had to sleep in in forty year. All my children were born there—the two that died an' the two that's livin'. I was sick with a fever, there."

She stepped to another door and opened it. It led into the small ill-lit pantry. "Here," said she, "is all the buttery I've got—every place I've got for my dishes, to set away my victuals in, an' to keep my milk pails in. Father, I've been takin' care of the miflk of six cows in this place, an' now you're goin' to build a new barn, an' keep more cows, an' give me more to do in it."

She threw open another door. A narrow, crooked flight of stairs wound upward from it. "There, Father," said she, "I want you to look at the stairs that go up to them two unfinished chambers that are all the places our son and daughter have had to sleep in all their lives. There ain't a prettier girl in town nor a more ladylike one than Nanny, an' that's the place she has to sleep in. It ain't so good as your horse's stall; it ain't so warm an' tight."

Sarah Penn went back and stood before her husband. "Now, Father," said she, "I want to know if you think you're doin' right and accordin' to what you profess. Here, where we was married forty year ago, you promised me faithful that we should have a new house built in that lot over in the field before the year was out. You said you had money enough, an' you wouldn't ask me to live in no such place as this. It is forty year now, an' you've been makin' more money an' I've been savin' of it for you ever sence, an' you ain't built no house yet. You've built sheds an' cow houses an' one new barn, an' now you're goin' to build another. Father, I want to know if you think it's right. You're lodgin' your dumb beasts better than you are your own flesh and blood. I want to know if you think it's right."

"I ain't got nothin' to say."

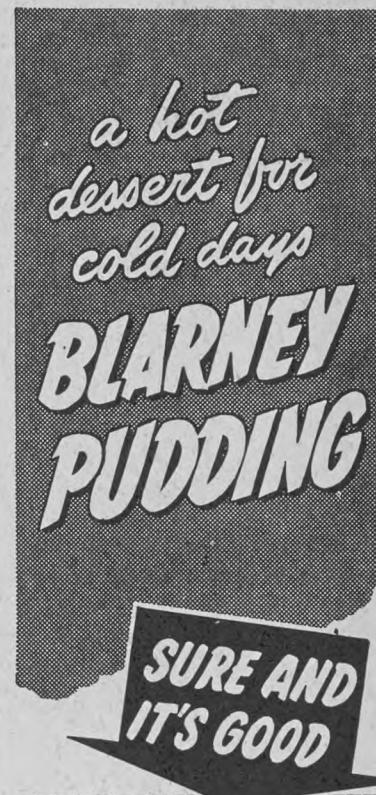
"YOU can't say nothin' without ownin'

it ain't right, Father. An' there's another thing—I ain't complained; I've got along forty year, an' I s'pose I should forty more, if it wa'n't for that—if we don't have another house, Nanny, she can't live with us after she's married. She'll have to go somewhere else



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to live away from us, an' it don't seem as if I could have it so, noways, Father. She wa'n't ever strong. She' got considerable color, but there wa'n't never any backbone to her. I've always took the heft of everything off her, an' she ain't fit to keep house an' do everything herself. Think of her doin' all the washin' and ironin' and bakin' with them soft, white hands and arms, an' sweepin'! I can't have it so, noways, Father."

Mrs. Penn's face was burning; her mild eyes gleamed. She had pleaded her little cause like a Webster; she had ranged from severity to pathos; but her opponent employed that obstinate silence which makes eloquence futile with mocking echoes. Adoniram arose clumsily.

"Father, ain't you got nothin' to say?" said Mrs. Penn.

"I've got to go off after that load of gravel. I can't stan' talkin' all day."

"Father, won't you think it over an' have a house built there instead of a barn?"

"I ain't got nothin' to say."

Adoniram shuffled out. Mrs. Penn went into her bedroom. When she came out, her eyes were red. She had a roll of unbleached cotton. She spread it out on the kitchen table, and began cutting out some shirts for her husband. The men over in the field had a team to help them this afternoon; she could hear their halloos. She had a scanty pattern for the shirts. She had to plan and piece the sleeves.

Nanny came home with her embroidery and sat down with her needlework. She had taken down her curl papers, and there was a soft roll of fair hair like an aureole over her forehead. Her face was as delicately fine and clear as porcelain. Suddenly she looked up and the tender red flamed over her face and neck. "Mother," said she.

"What say?"

"I've been thinking—I don't see how we're goin' to have any wedding in this room. I'd be ashamed to have his folks come if we didn't have anybody else."

"Mebbe we can have some new paper before then. I can put it on. I guess you won't have no call to be ashamed of your belongin's."

"We might have the wedding in the new barn," said Nanny, with gentle pettishness. "Why, Mother, what makes you look so?"

Mrs. Penn had started and was staring at her with a curious expression. She turned again to her work, and spread out a pattern carefully on the cloth. "Nothin'," said she.

Presently Adoniram clattered out of the yard in his two-wheeled dump cart, standing as proudly upright as a Roman charioteer. Mrs. Penn opened the door and stood there a minute looking out; the hallos of the men seemed louder.

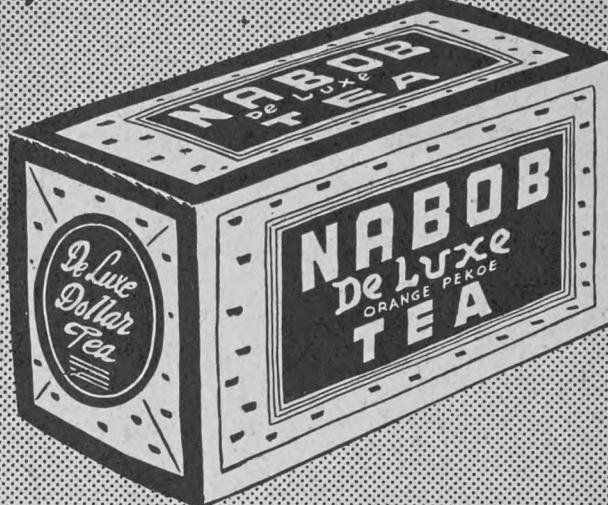
IT seemed to her all through the spring months that she heard nothing but the hallos and the noises of saws and hammers. The new barn grew fast. It was a fine edifice for this little village. Men came on pleasant Sundays, in their meeting suits and clean shirt bosoms, and stood around it admiringly. Mrs. Penn did not speak of it and Adoniram did not mention it to her, although sometimes upon a return from inspecting it, he bore himself with injured dignity.

"It's a strange thing how your mother feels about the new barn," he said, confidentially, to Sammy one day.

Sammy only grunted after an odd fashion for a boy; he had learned it from his father.

The barn was all completed ready for use by the third week in July. Adoniram had planned to move his stock in on Wednesday; on Tuesday he received a letter which changed his plans. He came in with it early in the morning. "Sammy's been to the post office," said he, "an' I've got a letter from Hiram."

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Hiram was Mrs. Penn's brother who lived in Vermont.

"Well," said Mrs. Penn, "what does he say about the folks?"

"I guess they're all right. He says he thinks if I come up country right off there's a chance to buy just the kind of a horse I want." He stared reflectively out of the window at the new barn.

Mrs. Penn was making pies. She went on clapping the rolling pin into the crust, although she was very pale, and her heart beat loudly.

"I dun' know but what I'd better go," said Adoniram. "I hate to go off just now, right in the midst of hayin', but the ten-acre lot's cut, an' I guess Rufus an' the others can git along without me three or four days. I can't get a horse round here to suit me, nohow, an' I've got to have another for all that wood haulin' in the fall. I told Hiram to watch out an' if he got wind of a good horse to let me know. I guess I'd better go."

"I'll get out your clean shirt an' collar," said Mrs. Penn calmly.

She laid out Adoniram's Sunday suit and his clean clothes on the bed in the little bedroom. She got his shaving water and razor ready. At last she buttoned on his collar and fastened his black cravat.

Adoniram never wore his collar and cravat except on extra occasions. He held his head high, with a rasped dignity. When he was all ready, with coat and hat brushed, and a lunch of pie and cheese in a paper bag, he hesitated on the threshold of the door. He looked at his wife, and his manner was defiantly apologetic. "If them cows come today, Sammy can drive them into the new barn," said he, "an' when they bring the hay up they can pitch it in there."

"Well," replied Mrs. Penn.

ADONIRAM set his shaven face ahead and started. When he had cleared the doorstep, he turned and looked back with a kind of nervous solemnity. "I shall be back by Saturday if nothin' happens," said he.

"Do be careful, Father," returned his wife.

She stood at the door with Nanny at her elbow and watched him out of sight. Her eyes had a strange, doubtful expression in them; her peaceful forehead was contracted. Nanny sat sewing. Her wedding day was drawing nearer and she was getting pale and thin with her steady sewing. Her mother kept glancing at her.

"Have you got that pain in your side this mornin'?" she asked.

"A little."

Mrs. Penn's face as she worked, changed; her perplexed forehead smoothed; her eyes were steady, her lips firmly set. She formed a maxim for herself, although incoherently with her unlettered thoughts. "Unsolicited opportunities are the guideposts of the Lord to the new roads of Life," she repeated in effect, and she made up her mind to her course of action.

"Sposin' I had wrote to Hiram," she muttered once, when she was in the pantry. "Sposin' I had wrote and asked him if he knew of any horse? But I didn't, an' Father's goin' wa'nt any of my doin'. It looks like a providence." Her mother's voice rang out quite loud at the last.

"What you talkin' about, Mother?" called Nanny.

"Nothin'."

Mrs. Penn hurried her baking; at eleven o'clock it was all done. The load of hay from the west field came slowly down the car track and drew up at the new barn. Mrs. Penn ran out. "Stop!" she screamed. "Stop!"

The men stopped and looked; Sammy upreared from the top of the load and stared at his mother.

"Stop!" she cried out again. "Don't put the hay in that barn; put it in the old one."

"Why, he said to put it in here," returned one of the haymakers, wonderingly. He was a young man, a neighbor's son, whom Adoniram hired by the year to work on the farm.

"Don't you put the hay in the new barn; there's room enough in the old one, ain't there?" said Mrs. Penn.

"Room enough," returned the hired man, in his thick, rustic tones. "Didn't need the new barn, nohow, as far as room's concerned. Well, I s'pose he changed his mind." He took hold of the horses' bridles.

Mrs. Penn went back to the house. Soon the kitchen windows were darkened and a fragrance like warm honey came into the room.

Nanny laid down her work. "I thought Father wanted them to put the hay into the new barn?" she said, wonderingly.

"It's all right," replied her mother.

Sammy slid down from the load of hay and came in to see if dinner was ready.

"I ain't goin' to get a regular dinner today, as long as Father's gone," said his mother. "I've let the fire go out. You can have some bread an' milk an' pie. I thought we could get along." She set out some bowls of milk, some bread and a pie on the kitchen table. "You'd better eat your dinner now," said she. "You might just as well get through with it. I want you to help me afterward."

Nanny and Sammy stared at each other. There was something strange in their mother's manner. Mrs. Penn did not eat anything herself. She went into the pantry and they heard her moving dishes while they ate. Presently she came out with a pile of plates. She got the clothes basket out of the shed and packed them in it. Nanny and Sammy watched. She brought out cups and saucers and put them in with the plates.

"What you goin' to do, Mother?" inquired Nanny, in a timid voice. A sense of something unusual made her tremble, as if it were a ghost. Sammy rolled his eyes over his pie.

"You'll see what I'm goin' to do," replied Mrs. Penn. "If you're through, Nanny, I want you to go upstairs and pack your things; an' I want you, Sammy, to help me take down the bed in the bedroom."

"Oh, Mother, what for?" gasped Nanny.

"You'll see."

DURING the next few hours a feat was performed by this simple, pious New England mother which was equal in its way to Wolfe's storming of the Heights of Abraham. It took no more genius and audacity of bravery for Wolfe to cheer his wondering soldiers up those steep precipices, under the sleeping eyes of the enemy, than for Sarah Penn, at the head of her children, to move all their little household goods into the new barn while her husband was away.

Nanny and Sammy followed their mother's instructions without a murmur; indeed, they were overawed. There is a certain uncanny and superhuman quality about all such purely original undertakings as their mother's was to them. Nanny went back and forth with her light loads and Sammy tugged with sober energy.

At five o'clock in the afternoon the little house in which the Penns had lived for forty years had emptied itself into the new barn.

Every builder builds somewhat for unknown purposes, and is in a measure a prophet. The architect of Adoniram Penn's barn, while he designed it for the comfort of four-footed animals, had planned better than he knew for the comfort of humans. Sarah Penn saw at a glance its possibilities. Those great box stalls, with quilts hung before them would make better bedrooms than the one she had occupied for forty years, and there was a tight carriage room. The harness room, with its chimney and shelves, would make a kitchen

of her dreams. The great middle space would make a parlor, by-and-by, fit for a palace. Upstairs there was as much room as down. With partitions and windows, what a house there would be! Sarah looked at the row of stanchions before the allotted space for cows, and reflected that she would have a front entry there.

At six o'clock the stove was up in the harness room, the kettle was boiling, and the table set for tea. It looked almost as homelike as the abandoned house across the yard had ever done. The young hired man milked, and Sarah directed him calmly to bring the milk to the new barn. He came gasping, dropping little blots of foam from the brimming pails on the grass. Before the next morning he had spread the story of Adoniram Penn's wife moving into the new barn all over the little village. Men assembled in the store and talked it over; women with shawls over their heads scuttled into each other's houses before their work was done. Any deviation from the ordinary course in life in this quiet town was enough to stop all progress in it. Everybody paused to look at the staid, independent figure on the side track. There was a difference of opinion with regard to her. Some held her to be insane; some, of a lawless and rebellious spirit.

Friday the minister went to see her. It was in the forenoon, and she was at the barn door shelling peas for dinner. She looked up and returned his salutation with dignity; then she went on with her work. She did not invite him in. The saintly expression of her face remained fixed, but there was an angry flush over it.

THE minister stood awkwardly before her, and talked. She handled the peas as if they were bullets. At last she looked up and her eyes showed a spirit that her meek front had covered for a lifetime.

"There ain't no use talkin', Mr. Hersey," said she. "I've thought it all over and over, an' I believe I'm doin' what's right. I've made it the subject of prayer, and it's betwixt me an' the Lord an' Adoniram. There ain't no call for nobody else to worry about it."

"Well, of course, if you have brought it to the Lord in prayer, and feel satisfied that you are doing right, Mrs. Penn," said the minister helplessly. His thin, grey-bearded face was pathetic. He was a sickly man; his youthful confidence had cooled; he had to scourge himself up to some of his pastoral duties, and then he was prostrated by the smart.

"I think it's right jest as much as I think it was right for our forefathers to come over from the old country 'cause they didn't have what belonged to 'em," said Mrs. Penn. She arose. The barn threshol'd might have been Plymouth Rock from her bearing. "I don't doubt you mean well, Mr. Hersey," said she, "but there are things people hadn't

ought to interfere with. I've been a member of the church for over forty year. I've got my mind an' my own feet, an' I'm goin' to think my own thoughts an' go my own ways, an' nobody but the Lord is goin' to dictate to me unless I've a mind to have him. Won't you come in an' set down? How is Mis' Hersey?"

"She is well, I thank you," replied the minister. He added some more perplexed, apologetic remarks; then he re-treated.

He could expound the intricacies of every character study in the Scriptures; he was competent to grasp the Pilgrim Fathers and all historical innovators; but Sarah Penn was beyond him. He could deal with primal cases, but parallel ones worsted him. But, after all, although it was aside from his province, he wondered more how Adoniram Penn would deal with his wife than how the Lord would. Everybody shared the wonder. When Adoniram's four new cows arrived, Sarah ordered three put in the old barn, the other in the house shed where the cooking stove had stood. That added to the excitement. It was whispered that all four cows were domiciled in the house.

Toward sunset on Saturday, when Adoniram was expected home, there was a knot of men in the road near the new barn. The hired man milked, but he still hung around the premises. There were brown bread and baked beans and a custard pie; it was the supper that Adoniram loved on a Saturday night. She had on a clean calico and she bore herself imperturbably. Nanny and Sammy kept close at her heels. Their eyes were large, and Nanny was full of nervous tremors. Still there was to them more pleasant excitement than anything else. An inborn confidence in their mother over their father asserted itself.

Sammy looked out of the harness-room window. "There he is," he announced, in an awed whisper. He and Nanny peeped around the casing. Mrs. Penn kept on about her work. The children watched Adoniram leave the new horse standing in the drive while he went to the house-door. It was fastened. Then he went around to the shed. That door was seldom locked, even when the family was away. The thought how her father would be confronted by the cow flashed upon Nanny. There was a hysterical sob in her throat. Adoniram emerged from the shed and stood looking about in a dazed fashion. His lips moved; he was saying something, but they could not hear what it was. The hired man was peeping around a corner of the old barn but nobody saw him.

ADONIRAM took the new horse by the bridle and led him across the yard to the new barn. Nanny and Sammy slunk close to their mother. The barn doors rolled back and there stood Adoniram, with the long mild face of

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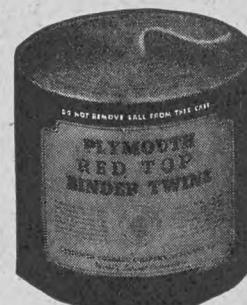
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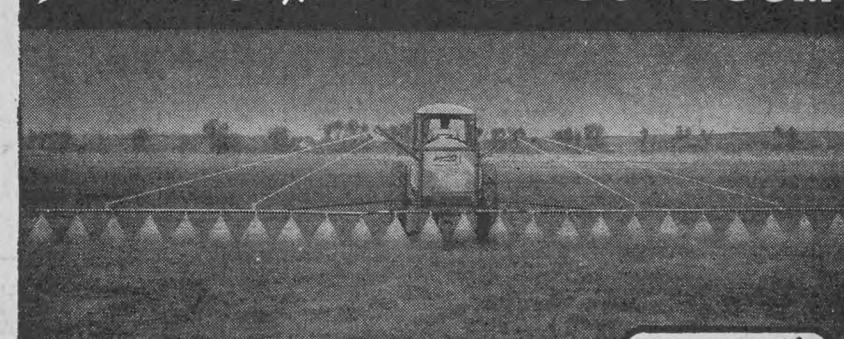
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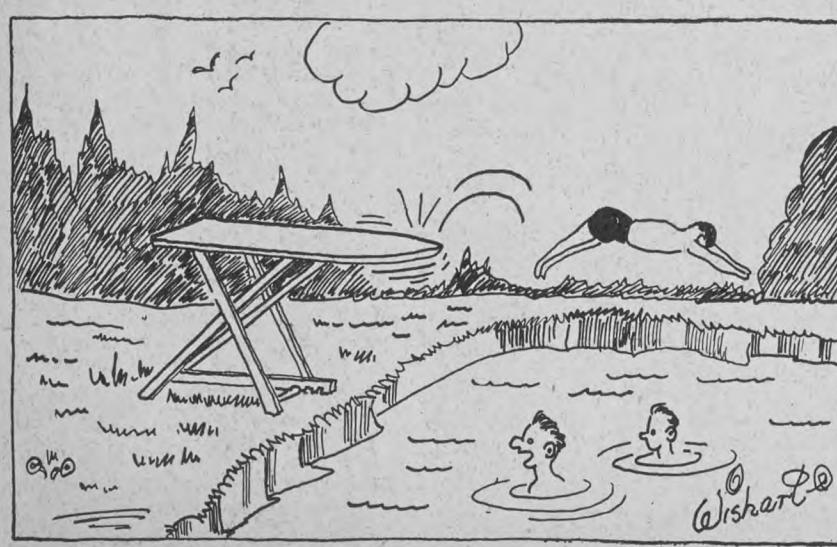
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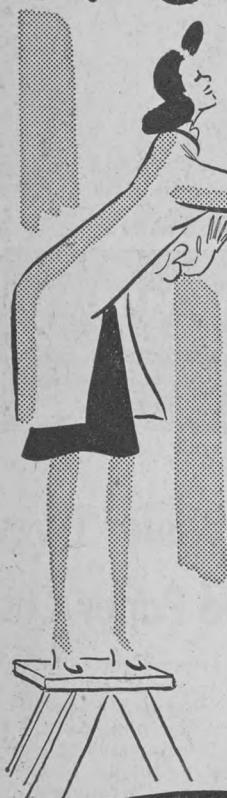
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the great Canadian farm horse looking over his shoulder.

Nanny kept behind her mother, but Sammy stepped suddenly forward and stood in front of her.

Adoniram stared at the group. "What on earth you all down here for?" said he. "What's the matter over to the house?"

"We've come here to live, Father," said Sammy. His shrill voice quavered out bravely.

"What—" Adoniram sniffed—"what is it smells like cookin'?" said he. He stepped forward and looked in at the open door of the harness room. Then he turned to his wife. His old bristling face was pale and frightened. "What on earth does this mean, Mother?"

"You come in here, Father," said Sarah. She led the way into the harness room and shut the door. "Now, Father," said she, "you needn't be scared. I ain't crazy. There ain't nothin' to be upset over. But we've come here to live an' we're goin' to live here. We've got jest as good a right here as new horses and cows. The house wa'n't fit for us to live in any longer, an' I made up my mind I wa'n't goin' to stay there. I've done my duty by you forty year an' I'm goin' to do it now, but I'm goin' to live here. You've got to put in some windows an' partitions, an' you'll have to buy some furniture."

"Why, Mother!" the old man gasped.

"You'd better take your coat off an' get washed—there's the wash basin—an' then we'll have supper."

"Why, Mother!"

SAMMY went past the window, heading the new horse to the old barn. The old man saw him and shook his head speechlessly. He tried to take off his coat, but his arms seemed to lack the power. His wife helped him. She poured some water into the tin basin and put in a piece of soap. She got the comb and brush and smoothed his thin grey hair after he had washed. Then she put the beans, hot bread, and tea on the table. Sammy came in and the family drew up. Adoniram sat looking dazedly at his plate and they waited.

"Ain't you goin' to ask a blessin', Father?" said Sarah.

And the old man bent his head and mumbled.

All through the meal he stopped eating at intervals and stared furtively at his wife, but he ate well. The home food tasted good to him and his old frame was too sturdily healthy to be affected by his mind. But after supper he went out and sat down on the step of the smaller door at the right of the barn, through which he had meant his Jerseys to pass in stately file, but which Sarah designed for her front house-door, and he leaned his head on his hands.

After the supper dishes were cleared away and the milk pans washed, Sarah went out to him. The twilight was deepening. There was a clear, green glow in the sky. Before them stretched the smooth level of field; in the distance was a cluster of haystacks like the huts of a village; the air was very calm and sweet. The landscape might have been an ideal one of peace.

Sarah bent over and touched her husband on one of his thin, sinewy shoulders. "Father!"

The old man's shoulders heaved; he was weeping.

"Why, don't do so, Father," said Sarah.

"I'll—put up the—partitions, an'—everything you—want, Mother."

Sarah put her apron up to her face; she was overcome by her own triumph.

Adoniram was like a fortress whose walls had no active resistance, and went down the instant the right besieging tools were used. "Why, Mother," he said hoarsely, "I hadn't no idee you was so set on it as all this comes to." Reprinted from the book "A New England Nun and Other Stories," copyright 1891, Haper & Brothers. Copyright 1919 by Mary E. Wilkins.

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Changes in U.G.G. Management

R. S. Law steps out after a long and distinguished career

ON April 30, R. S. Law, president and general manager of the United Grain Growers, retired for reasons of health. Thus ends the active career of one who rose step by step in the confidence of western farmers to reach and to hold for 18 years a leading place in the business of the co-operative marketing of farm produce in Canada.

Richard Stanley Law was Devon born. "Who's Who" records that he attended Mannamead College in his native city, but some changes in the family fortunes put him in a Plymouth counting house at an early age. English counting house apprentices in the late '90's were just half way between the



R. S. Law



J. E. Brownlee, K.C., LL.D.

easy discipline of modern office life and the harsh treatment of apprentices which darken the pages of Charles Dickens. The Plymouth office taught young Law how to keep books, but it also bred in him a determination to escape to the life of the country. His opportunity came with his majority when he set himself up in life as a farmer in one of the most pleasant valleys in all of England near Exeter, where life was leisurely and the shooting good.

But Mr. Law's horizons were wider than the valley of the Exe permitted. Encouraged by his new bride, formerly Violet Pedrick Strong, of Exeter, he moved to Alberta and settled on a farm about 10 miles northeast of Claresholm, Alta.

At the end of the first war the enterprising farmers of Claresholm organized a co-operative supply business, and the one among them with the best office training was pitchforked into its management. Reluctant as he was to leave the farm, the local co-op became opportunity in disguise for Mr. Law.

HIS work there attracted the attention of the U.G.G., who employed Mr. Law in 1920 as assistant to the vice-president. Secretary in the following year, and vice-president in 1929, he took over the presidency when Hon. T. A. Crerar resigned in 1930 to devote his whole time to politics.

It was a difficult year in business, especially for the U.G.G., which had sustained some heavy losses just prior to the crash. But under the new president's leadership, the position of the company improved steadily. When he stepped aside in April it could be said that the company was never in a stronger position.

Among his fellow citizens, R. S. Law will be remembered for the generous use of his time and resources in many good causes. Throughout his life he has been an energetic supporter of the Anglican church, and in later years of its educational institution, St. John's College. At one time he was president of the Winnipeg branch of the Royal Society of St. George. During the war he served as a member of the national war finance committee.

Succeeding Mr. Law as president and

general manager of the U.G.G. Ltd., is J. E. Brownlee, K.C., whose association with the company runs back 36 years.

The new president was born at Port Ryerse, near Simcoe, Ontario. At the age of 10 his father moved to Lambton County and opened a store at a country crossroads, so that the boy's formative years were spent in a rural environment. High school at Sarnia; 2½ years teaching school; in 1904 a freshman at Victoria College, Toronto University, bent on the study of political science.

Mr. Brownlee learned the art of salesmanship in the school of hard knocks. His school vacations were spent in London, Ontario, and Toronto, and one summer was spent in England selling

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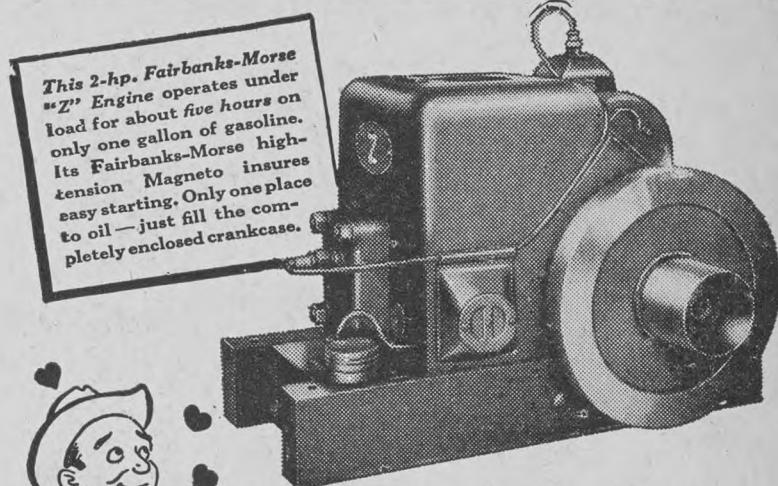
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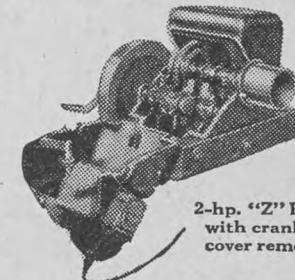
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MANNA FOR THE RAILWAYS

Continued from page 7

differences in length of haul into account.

AS is well known, the central provinces enjoy the advantage of lower railway freight rates because of the presence of formidable water and truck competition. For many months of the year, large boats can carry freight from the head of the Lakes to ports far down the St. Lawrence. Water borne traffic operates on such smaller rivers as the Ottawa, and on canals. The more thickly populated regions of Ontario and Quebec are served by a network of all-weather highways such as the prairies, as yet, can only dream of.

Those who have been pressing the west's case are seized with the understandable fear that with the higher freight rates now allowed by the Board, water and road competition will work still more to the detriment of those seven provinces where it is not a major factor.

To follow this argument, we must remember that the Board sets rates at the top only. A railway cannot charge more, but it can charge as much less as it chooses. The companies have been granted a 21 per cent flat increase for the greater part of their freight traffic, to relieve what was described in the statement accompanying their formal application of October 9, 1946, as "a unique and perilous position." This increase is calculated to yield them an additional \$70 million during 1948.

Will they draw this extra revenue equally from all parts of Canada? No, the western and Maritime provinces insist. Water and road competition will tend to hold down the increase to something less than 21 per cent in Ontario and Quebec, thereby widening the rate inequalities with the rest of Canada. This argument may not be the strongest feature of the prairie case, at present, because the rates went up on April 8 by the same percentages across the land. Still, there is nothing to prevent them being eased down again under the pressure of competition. It is certain the rates would not be so eased in the west, except perhaps very locally.

The Board of Transport Commissioners would not entertain the west's appeal for an increase—if an increase were unavoidable—that would fall less heavily on some areas than others, with the object of removing at least part of the existing discrimination. This was not the time to talk about discrimination, said the judgment. "As I view the matter," wrote the chief commissioner, "this (a straight increase) is the only workable and practical method of dealing with the question in order to provide the additional revenue required by the railways."

Arguments by the seven provinces were rather summarily brushed aside. For instance, British Columbia had contended that a straight percentage increase would narrow the distance eastward into the prairie provinces to which Pacific coast shippers could send their products in competition with eastern shippers. On that point the chief commissioner commented: "This general statement was not supported by any evidence with respect to actual traffic movements. To what extent shippers' markets would be actually restricted is I think unpredictable." He let it go at that.

AMONG the many references to the rulings of previous Boards in railway cases, appears one which may not do much to fan the hopes of those who look for a radical adjustment of the general freight rates structure. A pre-

decessor of Mr. Cross had once written that the Railway Act authorizes and justifies discriminations; that it is "only an undue, unfair or unjust discrimination that the law is aimed against."

Now it is time to consider the "unique and perilous" position in which the railways found themselves when they sought succor in October, 1946. To the Board, their case was almost overwhelming. It is quite true that none of the six commissioners would give them their 30 per cent, but five agreed on a 21 per cent increase (it would be somewhat less than that, actually, when the excepted or modified items in the application are taken into account), and one said that it should be 24 per cent.

Here one enters into a quaking morass of statistics. The Railway Association of Canada submitted on behalf of all its members that the railways had been operating under rigidly controlled freight rates in the face of steadily mounting costs. It pointed out that rates had been reduced by the Board in 1922, after the first great war, and that there had been no increase in the general level since then. Indeed, rates had been cut still further during the intervening quarter century.

NO one disputed the sharp climb of railway operating costs. In 1946, compared with pre-war 1939 levels, wages were up 27½ per cent (excluding a 10-cent per hour increase then pending), fuel 62 per cent, lumber 58 per cent, steel rails 32 per cent, and ties 94 per cent.

A decline in railway gross earnings had begun to be substantial in the latter part of 1945, and it was not matched by a decline in working expense. Costs continued to mount.

At the time of the application, in October, 1946, general economic conditions in Canada, says Mr. Cross in his judgment, pointed to a recession in general business activity. As events turned out, that did not happen. While the case was being heard, the railways' business picked up again, because of world demand for farm products and heavy machinery for reconstruction purposes. The peak was reached in May, 1947, when total operating revenues were 20 per cent higher than those of the corresponding month of 1946. Thereafter the gross figure began to dip once more while costs were steadily climbing and thereby accelerating the decline of net operating revenues.

AS far as total business was concerned, the chief commissioner noted that 1947 levels constituted an all-time high in the history of both major railways for any peacetime year, and in both cases were over twice the amount of revenues received by either of them in the immediate years before the war.

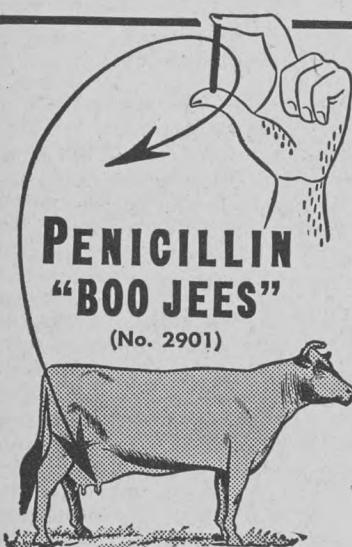
Passenger traffic had been declining since 1944 and 1945. But taking the backbone of the business, rail freight, this revenue in 1947 was actually the highest ever experienced by either the C.N.R. or C.P.R. It was even higher than in the war years. The C.N.R. reported an estimated \$287 million in freight revenue for the year 1947, the C.P.R. \$246 million. Compare these figures with \$117 million and \$105 million respectively in the depression year of 1936.

As a guide, the following table of total and net railway operating revenues for the C.N.R. and C.P.R. combined is given here, covering the years 1936 to 1947. These two companies usually do about 90 per cent of the business of all Canadian railways. It might also be noted here that freight and passenger revenue combined make up 85 to 90 per cent of the total railway operating revenues, with freight, of course, by far the more important. A further point is that this table does not quite give the picture of net railway income as distinct from net op-

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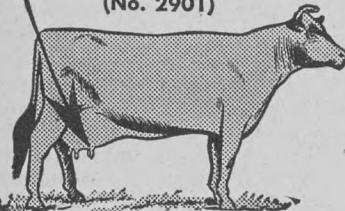


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erating revenue (the former would be slightly lower); and it leaves out entirely the controversial question of income from sources other than rail transportation.

	Total Operating Revenue	Net Operating Revenue
C.N.R. and C.P.R. combined— (millions of dollars)		
1936	292.6	36.5
1937	310.3	39.5
1938	299.8	30.6
1939	325.2	49.3
1940	383.8	80.6
1941	484.3	118.2
1942	591.0	150.5
1943	690.1	185.4
1944	711.8	136.9
1945	701.3	129.5
1946	646.2	81.2
1947	692.8 (estimated)	71.4

The chief commissioner was impressed with these figures. So was Mr. Chevrier, the transport minister, in the House of Commons. Both made the statement that, comparing 1947 with 1940, an increase in revenues of over \$300 million produced a smaller net. That was what rising costs could do to a railway company.

CONSIDERABLE argument developed before the Board over the matter of other income, that is, from steamships, hotels, telegraphs, lands, etc. Should this not be taken into account when weighing a company's desperate need for more money? No, replied the Board; if income from a profitable outside investment is to be used to reduce freight rates, or keep them where they are, then conversely it could be argued that if net losses in those other ventures were incurred freight rates should go up in order to recoup. In 1946, C.N.R. "other income" amounted to \$4.2 million; for the C.P.R., \$22.8 million.

Equally sharp disputes arose over the makeup of the C.P.R.'s balance sheet. With some reservations, the chief commissioner decided to take the C.P.R. as the best measure or guide in arriving at just and reasonable rates. There were questions about income tax, depreciation, and reserves for deferred maintenance. In highly technical arguments, Walter Macdonald, Winnipeg chartered accountant acting for Manitoba and Saskatchewan jointly, contended that the company's depreciation figure was much too high.

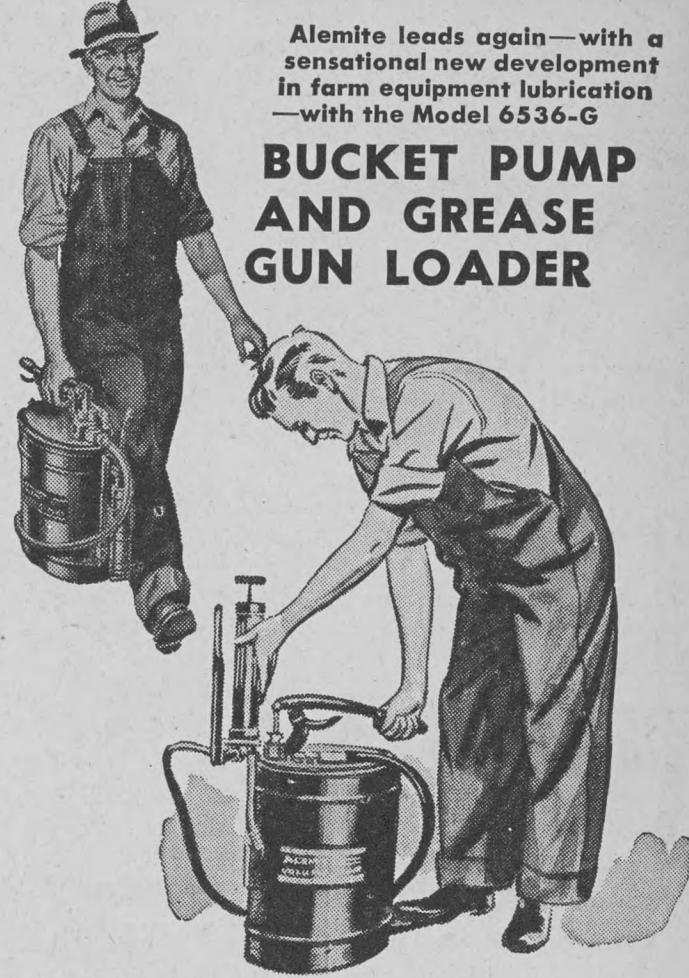
Many other figures were produced in an effort to show that the C.P.R. was not quite on its last legs—such as that its current assets were some \$144 million against current liabilities of \$47 million.

The Board however decided that the railways must have more freight revenue (or perish). Looking ahead, it could discern that long-deferred recession in trade. It seized on the recent curtailment of United States-Canadian trade as evidence, "as well as general world-wide conditions which may have an immediate and direct influence on the export traffic of Canada and as a corollary on the freight traffic offered to Canadian railways."

The Board appeared so certain of the future in this respect that it scarcely heeded the cries of western farmers and business men that their own future was in jeopardy if freight rates were increased.

"I appreciate," said the chief commissioner, "that these rate increases will be a considerable burden on the people of Canada who use the railways. But the cost of everything entering into the operation and maintenance of the railways has increased most substantially during the last few years. It would seem to me unreasonable that the railways should be expected to provide the necessary transportation services of this country unless they receive rates that will enable them to meet increased costs of operation."

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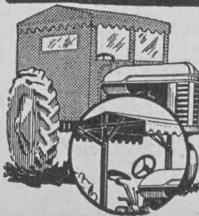
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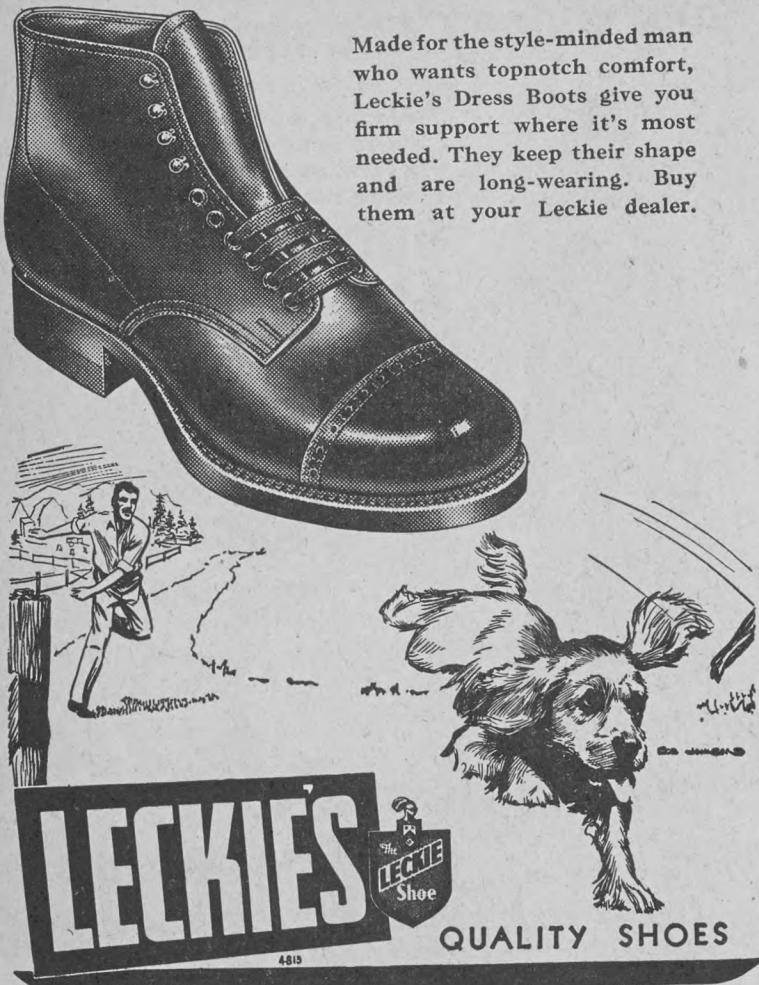


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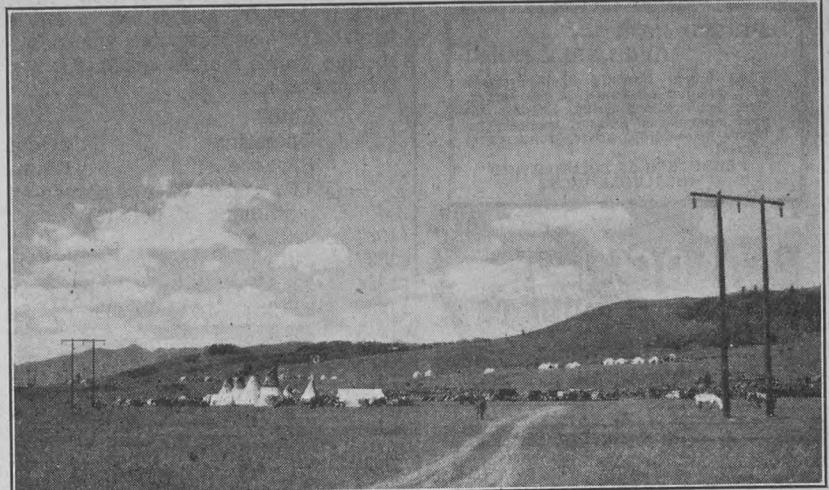
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Stoney Indian Stampede west of Calgary, 1947.

Hill-Top Tales from Dan McCowan

A packet of stories from a naturalist story-writer and long associate of the Foothills country

THE Scot with an identifying and pleasing burr in his voice, who so often wanders into the far corners of the earth and takes over the management of affairs for the lack of a better man to do it, is a welcome and familiar figure. He invariably becomes a part of, but never entirely at one with his new environment. Something of the granite of the Scottish hills and the wild beauty of the lochs and braes of Scotland clings to him and holds his memory as by a magnet, from which no force is ever quite strong enough to disengage him. The result is that he adopts his surroundings rather than is adopted by them.

Dan McCowan has adopted that portion of the Rocky Mountains in the general vicinity of Banff. Why he settled there in 1911, we do not know, but perhaps his birth in Perthshire, Scotland, within sight of the Grampian hills accounts for it. At any rate, he has become known by sight or reputation to many thousands of Canadians, by reason of his writings as a naturalist, his lectures across Canada, his broadcast talks and his books.

Genial, unassuming and filled with the lore of nature and of the romantic West, he has become one of the most interesting and familiar Canadian characters. His camera and his pen are his tools and he draws his raw materials from the vast store, both animate and inanimate, which Nature has distributed with such a lavish hand in the region of the Rocky Mountains.

There has been published this year a new book from the pen of Dan McCowan which, unlike his other books, is filled with human interest tales rather than accounts of birds and flowers and animals. During the last 40 years he has met many interesting and romantic figures, and has traced down incidents relating to others whose names and doings we associate with an earlier West and with an even more vivid romance.

THE first of the 24 stories contained in McCowan's latest book "Hill-Top Tales" (Macmillan's—\$3.50) published earlier this year, is about the Stoney Indians, the Assiniboines, who are a part of the still more inclusive Sioux Nation, and eventually settled in the foothills of the Rockies. The tribal name, McCowan tells us, was derived from the fact that it was the Stoney who first developed the practice of cooking meat in water boiled in a buffalo hide lining a shallow depression in the ground, and heating the water with heated stones carried in tongs of green willow. It was to these Indians, who bore names like Peter Ear and Roll-in-the-Mud that the Methodist missionaries George and John McDougall,

ministered for a combined period of 77 years, and whose church, still standing, though in disrepair and dilapidation, is marked by a nearby cairn as one of Canada's historic sites.

McCowan tells of Alexander Henry, the Younger, from whose interesting and unusual diary he quotes the following:

"Indians having asked for liquor and promised to hunt well all summer, I gave them some. Grand Geule stabbed Capot Rouge, LeBoeuf stabbed his young wife in the arm. Little Shell almost beat his old mother's brains out with a club and there was terrible fighting among them. I sowed garden seeds."

Alexander Henry, the Younger, was a servant of the North-West Company, and a close observer, as witness the following:

"L'Hiver hamstrung his wife to prevent her gadding about; the rascal cut the tendons of both heels while she attempted to defend herself."

All this was in the first decade after 1800. There is also David Thompson, "the most famous geographer in the history of Canada," whose tremendous exertions in the area of Columbia and the Thompson rivers secured for him a fixed place in the annals of western Canada."

There appears also Sir George Simpson, virtually ruler of north-west Canada around 1840, sometimes called "the little emperor." Governor of the Hudson's Bay Company, Simpson once took the body of John Rowand, chief factor at Fort Edmonton, who wished to be buried in Montreal, in his own canoe, preserved in a cask of rum. East of Fort Garry, the voyageurs refused to carry such a cargo farther, whereupon it was shipped from Hudson's Bay to England, then back to Montreal for burial.

McCowan pays tribute to many varied characters, among them Catherine Schubert, wife of a gold seeker from Ontario, who trekked to the wilds of British Columbia in 1862. A lone woman in the party of 150 men who trekked from Fort Garry to the mountains in oxcarts, and with three children six years and under, this intrepid woman braved every hardship and danger, including hunger and violence. On the day of her arrival in Fort Kamloops, in 1862, five months after leaving Fort Garry, she gave birth to her fourth child, the first white girl born in interior British Columbia, and named Rose.

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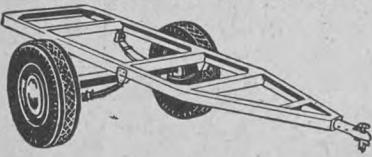


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high adventure. It is good also to know something of the lore of one's country; and of one section of Canada that has been his chief interest for so many years, Dan McCowan bids fair to become chief custodian of its folklore.—H.S.F.

Children of the Sun

It was announced last week that an asteroid had entered the earth's orbit. This minute planet, which is only two miles in diameter, is now about 18,000,000 miles away, and, though it may get a little closer, it is unlikely to come into collision with the earth. It is one of only three or four asteroids known to have entered the orbit of the earth, although at least 1,500 of these midget children of the sun are known. Most of them inhabit the wide gap between Mars and Jupiter. The biggest is only about 460 miles wide, about a fifth of the diameter of the moon. No one knows where they came from, but plausible guesses include the theory that in distant ages a planet exploded, and these useless particles of matter are all that are left.

This new asteroid is by no means the closest visitant we have had. There have been others, coming within less than ten million miles, and in October, 1947, the record-breaker, Hermes, sidled up to a mere 400,000 miles. It is said that one reason asteroids and the earth never have collided is that the orbits of both are not constant, and thus the probabilities of contact are greatly lessened. Most of the asteroids are so small, however, that the bump would do relatively little damage, and the chance of it hitting a large centre of population is so small as to be virtually non-existent.—Globe and Mail.

PARKSVILLE FIELD DOG TRIALS

Continued from page 54

Nelson's Black Prince, a national champion, competed. He is a handsome black Labrador. His perfect performance won the hearts of the spectators. The judges were impressed too. They took little time in deciding to give the palm to Black Prince.

Victor Bonny Boy slipped up on his marking. However his perfect response to handling, his good form and style on the field and water, placed him second.

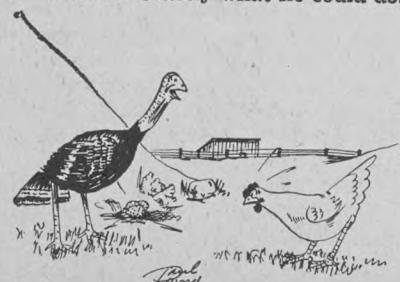
Bracken's Dynamite who recently won the B.C. Gun Trial, Open All, took third honors.

Field dog trials is not a sport restricted to the wealthy. The average income man, with a good retriever can afford the small expenditure involved.

It takes ten points to prove a dog is a champion. The dog must win a first, five points, to make up the total score demanded.

A man who is the proud owner of a retriever after seeing his first field trials, will wend his way home in an exultant mood. On his arrival, he will grin fondly at his dog and address him thusly, "Shucks, Pal, with a little training, you'd outshine any of these dogs I saw today. I'll bet anything I could make you a champion!"

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The Beneficial Bat

From this little animal humans learned the secret of radar

By KERRY WOOD

SOME folks are frightened of bats, because they have heard strange stories about the blood-sucking vampires that live in tropical jungles. But here in Canada we have no harmful bats of any kind; the little creatures do a great deal of good for mankind by feeding on injurious insects such as miller moths, mosquitoes, and beetles. There is no need to be nervous if a bat flies overhead when you are walking along a woodland path at evening. The bat is only interested in catching some insects for its supper, and your progress along the path arouses moths, mosquitoes, and other insects from rest and they fly up into the air behind and above you. That's why bats are so often seen flying around us as we walk through the twilight woods.

The bat that is most plentiful in numbers throughout Canada is the Little Brown Bat, a tiny creature with a body only three and a half inches long, with a wing spread of around nine inches. The body is covered with a dull, brownish hair, while the wings are of skin that is dark slate in color. This bat has prominent ears, slightly pointed—perhaps you've heard how important it is for a bat to have good hearing? All the time a bat is darting in and out among the tree tops, swerving this way and that to avoid striking the interlocking branches and twigs, the little animal utters a series of shrill squeaks. Those squeaks are pitched so high and shrill that our human ears cannot hear them. Bats keep up a steady series of squeaks all the time they are flying and the sounds strike any solid object which happens to be near, like tree trunk or branch or twig, which throws a sound reflection back to the bat's ears. The bat hears that tiny returning echo of its own voice and thus is warned about the presence of the nearby branch and veers one way or another to avoid striking it. This system of detecting obstacles is now known to science as the radar principle, and was used during the war to detect the approach of ships, submarines, and airplanes. Mankind found out about the radar system of detection only six or eight years ago, but bats have been using this marvellous radar for thousands and millions of years.

THE Little Brown Bat spends the sunny hours hidden in attics or church steeples or barn lofts, squeezed into dark crevices or nooks where the light won't bother its eyes. Sometimes it hangs head down, holding onto the perch by means of the finger-like hooks on the first joint of the wings. Sometimes it crawls between boards or under shingles and lies flat, sleeping away the daylight and stirring at evening. You'll hear the squeaks and scrapings as the bat wakes, and if you go into a loft or attic to watch, you'll see how the Little Brown Bat stretches its rubbery, skin-covered wings, licking them clean and unfurling them ready for the night's flight. The bat also combs its fur, using hind claws and teeth to tidy and smooth the hair and cleansing its pelt of any dirt or vermin.

Then it launches itself aloft, fluttering across the attic to an opening where it can get outside. Sometimes mother bats carry their babies with them, the youngsters clinging to their mother's fur and hanging on tight while she flies abroad to find food. Other times, the young bats are left in the attic, the mothers returning from time to time to feed them. During the latter end of summer young bats are too large and heavy to be carried by the mothers, so they are left in the attics or barn lofts or in hollow trees or caves.

There are many different kinds of

bats found in Canada, but most of them are sub-varieties of three or four main types such as the Little Brown Bat which has been described. Other important types are the larger Silvery-haired Bat, the Big Brown Bat, the Red Bat, and the Hoary or Great Northern Bat. The Silvery-haired Bat is the one you see hanging head down inside large hollow trees, the type of roost it prefers to any other hiding place. Some of the others may be seen in attics and lofts of buildings, and a few of our bats like to seek out caves. But the true cave-dwelling bats live far to the south of Canada in the southern States, where such bats sometimes gather in giant caves or caverns by the hundreds and thousands—such as in the Carlsbad Caverns of New Mexico.

ONE of the best places for studying bats is on the shore of a slough or lake, near trees. Bats love to skim over the water to get drinks, and they like to flutter back and forth across the skies above the water in search of dancing swarms of insects.

Bats have an easy life of it, if you believe that sleeping is easy. They are active for only a few hours during the twilight and the early part of night, then they rest again until the dim period just before dawn, when they feed a second time before hurrying back to their attics and hollow trees and caves where they sleep away the long summer hours of daylight. Our Canadian bats are mostly migratory—that is, they go south during the autumn to spend the winter in a warmer climate, returning to Canada around the first of May when their insect food appears. A few bats may hibernate in favorite locations, sleeping all winter long until spring thaws the landscape and brings back the warm, humid nights they love so well. August is their favorite month; bat food is most plentiful then, and they gather at favorite spots to hold bat conventions.

Don't worry about the old superstitions about bats. Some of the old witch-stories of the past have made us think that bats are bad little creatures. And some of our modern movies have added to the silliness, making bats seem like evil omens. But in actual truth, these brown-furred little fliers of the twilight are most useful to man, because they devour several times their own body weight in harmful insects every night. The more bats you see around in the evening skies, the less mosquito bites you'll suffer!

BUT if you don't like bats living in your house attic, here is an easy way to get rid of them without harming the bats and without causing you much trouble. Simply take a couple of pounds of camphor balls, divide them into quarter-pound lots and place each lot in a cheesecloth bag, then hang the bags at various parts of your attic, particularly around chimneys and in dark corners. Bats dislike the camphor smell and usually avoid attics so treated. Of course the camphor evaporates, therefore a new batch has to be used every summer to keep the attic saturated with the smell. But camphor is cheap and this little remedy really works. (This control method has been taken from the writer's new book, "A Nature Guide for Farmers.") To permanently rid your attic of bats, however, you should get a carpenter to seal all cracks and crannies around windows and eaves and particularly around chimney flashings.



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The Country Boy and Girl

Annie Ant's Adventure

By MARY E. GRANNAN

ONE day little Annie Ant went out for a stroll in the back meadow. Her ant hill was near the meadow fence, but she often left the hill to see what was going on in the world. On this morning when she was strolling she heard a sudden cry for help. She hurried along as fast as her black legs would carry her to see what was the matter. The barn cat had caught a fat robin and would not let him go.

"Please let me go. Please! Please!" begged the robin of the cat, but the cat just growled angrily and turned the robin over in the dust.

"Oh dear!" cried Annie Ant. "This is too bad. The cat must not kill that robin. I've got to do something to save him." Annie knew that whatever she was going to do, she must do it quickly, and without a thought for herself, she ran towards the cat. She ran up his leg, over his shoulder, past his ear, down his face and stopped when she reached his nose. She took a sharp nip.

"Mieow . . . Mieow . . ." he cried and he let go of Mr. Robin, who quickly flew away. The cat was very angry at Annie Ant and tried to catch her with his paw, but Annie was too quick for him. She scuttled away and hid under the meadow grasses.

But the robin had seen where Annie had hidden herself and when the cat had gone, mewling with his sore nose, back to the barnyard, the robin went over to Annie.

"Thank you for saving me, Annie," he said. "I thought that I'd never chirp another song."

Annie smiled at the lovely red-breasted bird. "I'm glad I was able to help you, Robin," she said. "You see I can't sing myself and I love to hear your songs. I wouldn't want anything to happen to you."

"I wouldn't want anything to happen to you, either, Annie," said the bird, "and if you ever need help, you let me know."

Annie said that she would. But she didn't think she would need his help so soon. It was two days after the cat had caught the robin, that Annie went out again to see the world. This time, instead of going across the meadow, she turned toward the woodland. She came to the foot of a tall spruce tree, and she said to herself, "I think it would be nice to walk up the trunk of this tree today. I've never walked up a spruce tree." So Annie started her upward trip. She walked up and up, with no mishap, until suddenly she walked right into some spruce gum that was running freely in the summer sun. She was caught as solidly as if she were glued to the tree. She tried to go forward, but she could not. She tried to go backwards. She could not. She struggled until she fell. She knew now she would never be able to get herself out of the gum. She closed her eyes to wait for the end. And then suddenly, gay chirping reached her ears. It was the robin. He was singing on the topmost branch of the tree. She opened her eyes. He would help her, if he could hear her against the notes of his song. She called out as loudly as she could. She was so tired with struggling that her voice was very small.

"Robin . . . Robin," she called.

His chirping stopped. "Robin," she called again.

"Who is it?" he asked.

"It's Annie Ant. I'm caught in the



MARBLE games were just meant for these warm May days and no doubt you already have a pocketful of "agates," "dibs," and "alleys." You and your friend choose a spot warmed by the sun and well out of the wind to play games either as "just a friendly game" or "for keeps." Those tiny nests you see in the trees and on the ground are built by clever bird carpenters who have fewer tools to work with than a real carpenter. A bird must carry all the material for its home in its nearest puddle and wetting her breast in the water she takes up a lump of mud and returns to the nest. She places the lump of mud inside the nest and smoothes it down with her breast and so she keeps on bringing more mud and smoothing away until the whole inside of the nest is coated with mud and looks like a smooth bowl. The nest is then lined with soft grass, ready to receive four sky-blue eggs. Our robins are very sociable birds and will allow you to watch them at work. This spring you may have a chance to watch this bird carpenter at work.

gum of the spruce tree. Please come and get me out."

The robin flew from his perch and found Annie. It took him some time to get Annie out of the gum. He worked as quickly and carefully as he could. When he had at last freed her, he carried her in his bill to the woodland pool, so that she could bathe in its cool waters.

"It's my turn to thank you, now, Robin," she said.

"Yes," laughed the robin, "I guess it is. Annie," he said, "after this, you and I had better watch where we're going."

"Yes," said Annie, as she left the pool to go off into the glen to see the world.

How Do You Shake Hands?

ARE you a bit embarrassed when it comes time to extend your hand in friendship? Do you sometimes hesitate, wondering whether you should offer your hand, or not? Or have you an uncomfortable feeling that your handshake is rather dull and cold, and that it lacks the warmth and sincerity of your feelings?

Yes, there are rules governing handshakes but fortunately they are not so hard and fast as some other rules of manners.

Nowadays, two boys or men may "shake" but girls and women when extending the hand of friendship expect just a "clasp." The modern trend is for girls to do less hand-shaking than formerly. If a girl wants to be particularly friendly when introduced she will offer to shake hands. It is entirely up to her. A boy is supposed to wait for the girl to indicate her preference in this regard.

When among people your own age the safe rule is: If in doubt, put your hand out. There can be no better training for future social and business contacts than by mastering the art of hand-shaking. The wise rule to follow when among older people is: Never extend your own hand first. Give the older person the privilege of taking the lead.

"Pumping" or "squeezing" the hand is not considered good taste. A reasonably firm grip is best, and one or two "pumps," according to the occasion. When shaking hands, too, don't overlook the pleasant smile that adds to the sincerity of the occasion.

Handshaking is an art. Your reaction to anyone may largely be due to the warmth of the handshake you get. There are ever so many occasions when you may be called upon to use your hand as an ambassador of friendship: When you meet, when you part, when

second and go on counting without stopping to rest, eat, or sleep, it would take you 100,000 years to count the brain cells. So you see there are plenty of compartments in which to store away all the knowledge you pick up as you go through life.

The more developed your brain becomes, the more folds and wrinkles it gets. In some really clever people, the total surface area of the brain is 675 square inches or almost five square feet, quite a "brain box" to have stored away in one little head.—Walter King.

My Own Book of Stories

No. 8 in series

WONDERFUL adventures happened to Robinson Crusoe who ran away to sea although his father told him it was a life of hardship. On one trip his ship was wrecked and only Crusoe was saved for he was washed up on the shore of an island where no people lived. At first he wished himself dead but soon he began to make a home for himself. From his ship which remained afloat for a few days he was able to bring a few things which he used in his new home. His home (which you see in the picture), was built of sharp pointed stakes and instead of a door Crusoe used a ladder to enter his home. Soon he made friends with the animals of the island—a kid that had lost its mother, a parrot, two cats, and a dog he had brought from the ship.

To keep an account of the days he cut a notch in a pole for each day. He even had a little garden for he had found a bag of corn on the ship. He learned to make baskets and tried to make a boat but when it was finished it was so large he could not get it down to the water.

One day Crusoe found the mark of a footprint in the sand which made him fear he would be attacked by savages. Later Crusoe was able to save a poor fellow from the savages. This man he called Friday because he had found him on that day. He taught Friday to speak his language and Crusoe was very glad of his company.

Not long afterwards an English boat came to the island and Crusoe returned to his own land after having lived on the island for twenty-eight years.—A. T.



Picture of Robinson Crusoe and his friends to color.

THE Country GUIDE

with which is incorporated

THE NOR'-WEST FARMER and FARM AND HOME

Serving the Farmers of Western Canada Since 1882.

VOL. LXVII

WINNIPEG, MAY, 1948

No. 5

Sidestepping Responsibility

If there is one subject upon which westerners are in complete agreement it is the damaging effect of discriminatory freight rates on the economic life of the four western provinces. The lengthy hearings on the railways' application for a 30 per cent increase caused scarce a ripple of interest in central Canada but were eagerly followed from the Great Lakes to the Pacific. The case against the application was ably presented. As it progressed, confidence rose in the West that its view would prevail. Leslie A. Mutch, Liberal M.P. for South Winnipeg, had some warrant for saying in the House on April 5 as reported by Hansard, "I think I speak for the people of Manitoba when I say that we believe no case was made for an increase in freight rates at the present time."

Western opinion apparently failed to appreciate that its case was fatally compromised by the refusal of the Board to take into account "other income." The C.P.R., for instance, on its own showing made a net income from its railway operations of \$22,892,189. It also earned \$24,788,927 from other activities. The Transportation Commissioners ruled that railway operations should pay the fixed charges on the whole capital structure of the company, even that of the other enterprises which earned the "other income." By this arithmetic the Board calculated that the C.P.R. must have \$19,724,333 more income, a sum which could be earned only with the aid of a 21 per cent increase in rates. The western viewpoint is that the other income should have been used to offset the capital charges on the services which earned it.

Public sentiment in the West is not directed against the Board, however, but against the government for the way in which the outcry of protest from the Maritimes and the West has been stifled. Parliament is the only court of appeal against judgments of the Transportation Commission. A level of freight rates which railways consider necessary to provide adequate revenue may be crippling to certain industries, or to certain sections of Canada. It may increase the cost of producing some export commodities to the point where the Canadian product cannot meet foreign competition. It may increase the cost of operations in frontier communities to the extent that further attempts at agricultural expansion become useless. It will certainly be a blow to the livestock industry, the extension of which is acknowledged to be a national necessity.

The Transportation Board is not designed to rule on the relative importance of such matters. These are the concern of Parliament. It is a responsibility Parliament cannot escape in the long run. Yet Hon. Lionel Chevrier, Minister of Railways, swept aside every consideration except the alleged need of more revenue for the carriers. Rate increases first, he insisted, and appeals from the provincial premiers afterward, "if it is considered necessary to hear them."

As a consolation the country is offered a long drawn-out examination of the Canadian rate structure, during which time the burdensome rates endorsed by the government will have to be paid by the people of Canada. Certainly an overhaul of the rate structure is long overdue. The need for an enquiry is itself an argument against the extension of discriminations em-

THE COUNTRY GUIDE

bedded in the present defective rate structure. But the government takes the opposite course. The doctor increases the dose of a harmful medicine while he looks hopefully around for some other nostrum. The proposed enquiry is merely sugar coating to induce the patient to swallow the evil pill more readily. The premier of Saskatchewan has characterized it properly as "an attempt to divert public attention from a piece of rank injustice. It is," he charges, "a direct insult to the Maritime and western provinces." The government's strategy has saved it from defeat in the House, but it has done so at the expense of its western members. They now have to face the wrath of their constituents who will not be put off with plausible hopes based on a new rate structure.

The Garson-Howe Correspondence

The correspondence over coarse grains marketing between Premier Garson of Manitoba and Rt. Hon. C. D. Howe, Federal Minister of Trade and Commerce, placed before the Manitoba legislature on April 1 brings out into the open some features which seem to be conveniently overlooked in the East.

On March 19 the Ottawa House passed a bill providing for the marketing of coarse grains through the Wheat Board, in the anticipation that the prairie provinces would pass complementary legislation as required by the B.N.A. Act in cases involving provincial jurisdiction. Premier Garson was not, however, as compliant as Ottawa expected. He foresaw damaging criticisms which could be directed against his government in the event of the Ottawa act becoming effective through his acquiescence. He thereupon asked Mr. Howe some very pertinent questions.

Mr. Garson observes that while the Wheat Board was set up as an agent of the producers, it became in 1943 the agent of the government, and has been used since then as an instrument for keeping down the cost of living in Canada at the expense of the farmer. Is the same principle to be applied to the marketing of coarse grains? Is the price to be set, for example, at a certain level to provide livestock feeders with feed at a satisfactory price? If so, will the resulting loss be left to the producers of coarse grains, or will it be paid by the whole body of the Canadian people?

On what other products of Canada, Mr. Garson asks, is the government going to fix the price and leave the burden of carrying the difference between the government price and the market price upon the producers of these products? And if this is good policy for wheat and beef and pork and poultry products, and now oats and barley, why is it not good policy for copper, newsprint, fish, tractors and farm implements?

If complementary legislation is required from the three prairie provinces, why should it not be required of Ontario and Quebec? Suppose 1948 was to produce a better than average crop of oats and barley in Canada, and a short American corn crop, which would make the sale of Canadian feed in the U.S. an attractive proposition. Would the absence of complementary legislation in the eastern provinces enable eastern growers to sell for a high price in the open market, while western grain growers were compelled to sell through the Wheat Board at a dictated price?

Mr. Howe's meagre reply does not tend to breed confidence in the West. He acknowledges that the government expects the Canadian Federation of Agriculture to recommend a price satisfactory to both Canadian producers and buyers of feed grains, a responsibility which would, by the way, split the Federation right down the middle. On the other points Mr. Howe is silent.

On the evidence as revealed in this correspondence it seems quite likely that the western provincial governments will conclude that theirs is an unhealthy climate in which to wear

the garment with a target over the heart fashioned for them at Ottawa.

The Italian Election

The Italian election ended with a decisive defeat for Communism. Out of 29,000,000 registered voters over 27,000,000 went to the polls, including the aged, hauled out from retirement, and invalids who left sick beds. Italy has cast her lot with the western world whose civilization she was in such large measure the founder.

This election provides further indication of the receding power of Communism which dates back to the enunciation of the Marshall Plan. The American secretary's Harvard speech gave western Europe the assurance of the material help it required to bridge over the period of reconstruction. Infinitely more important, it armed the countries to which it was addressed with new hope, and the psychological effects promise to be as important as the economic aid now on the way. The essence of the plan is that western Europe is to sink its national rivalries and embark on a concerted effort to revive western civilization and to reassert those values on which it is founded.

But the Italian election is only one bastion in a strongly held position. It will prove a permanent gain only if the Italian government can make some real progress against the poverty and misery which is the accustomed lot of millions of its countrymen. Communism cannot be destroyed by force, as the Americans in Greece are beginning to discover. It can only be defeated by the establishment of a regime founded on economic justice. Premier de Gasperi will have help proffered from economic pirates in various disguises, and a whole crew of political reactionaries. His one chance of success is to repel them with the same determination he has shown toward the Communists.

Air Mail

The news of the day contains an announcement that the Canadian Post Office and the Trans-Canada Air Lines are studying an arrangement whereby first class mail will be carried at present rates by air wherever air carriage by established lines can speed delivery. This commitment is good evidence of the progressive outlook of both organizations.

Dwellers near Canadian airports have become aware of the advances in design of the newer types of aircraft. The swift jet planes of fighter design have by no means stolen the spotlight. Attention is drawn to the North Star class of transport plane, whose perfection doubtless plays a part in the projected post office plan. These planes follow the Douglas DC4 design, but instead of the radial engines on the American-made DC4's they are powered with four 1,995 H.P. Rolls-Royce engines, the pride of British engineering. The total horsepower on one of these planes is thus about two and one-half times that of our heaviest railway locomotives. American commentators declare that this new type of air carrier may well prove the solution of the whole air transport difficulties of the British Empire.

Britain's reconstruction difficulties have been well publicized, and by no one more than her own Sir Stafford Cripps. Plans made at the close of the war were not realized due chiefly to over-optimistic views regarding the revival of continental trade, higher costs of imported raw materials and manpower shortage. Nevertheless some significant advances have been recorded. Coal exports have been resumed and by 1951 should reach 29 million tons annually. Electricity generated has reached a level twice prewar. Steel production has reached a level 35 per cent over prewar. In 1938 Britain exported a monthly average of 6,873 motor vehicles. Last October she set a new record with 22,585. Enemies of the administration say government controls have retarded recovery. Over against this must be set the freedom from labor strife which would have been inevitable under alternative policies.